

# TECHNOLOGY ASSESSMENT AND FORECAST REPORT

## MECHANICAL CLASSES

1977 - December 2001



April 2002  
U.S. PATENT AND TRADEMARK OFFICE  
INFORMATION PRODUCTS DIVISION -- TAF BRANCH  
PK3- Suite 441, WASHINGTON, DC 20231  
tel (703) 306-2600 / FAX (703) 306-2737

*A TECHNOLOGY ASSESSMENT AND FORECAST REPORT*

# Technology Profile Report - MECHANICAL Classes

## Explanation of Data

This Technology Profile Report profiles the patent activity for U.S. utility patents \* granted between **1977** and **December 2001** in MECHANICAL technology discipline classes within the U.S. Patent Classification System (USPCS).

The report is generated by identifying appropriate Patent and Trademark Office (PTO) classes, i.e., those entirely or substantially pertinent to the technology discipline of interest. The patents in these classes are then included in the profile. This procedure results, in most cases, in the inclusion of the majority of patents relevant to the technology discipline and few, if any, patents which are not relevant. However, any patent listing provided should not be considered to be inclusive of all relevant patents, nor exclusive of all irrelevant patents.

### Data Distribution By Date of Grant and By Date of Application

#### **Parts A1 and A2**

Part A1 distributes utility patent GRANT data by year of patent grant ("Patents Granted By Date of Patent Grant"). Part A2 distributes patent GRANT data by the year in which the patented application was filed ("Patents Granted By Date of Patent Application"). Parts A1 and A2 each provide patent counts (pages A1-1 and A2-1) and percent distributions (pages A1-2 and A2-2).

Patent data, as shown in the "**Pre 1988**" column, correspond to selected patents \* in the data base which were granted during the period **1977 to 1987**.

#### **Part B**

Part B of this report distributes patent GRANT data for organizations that have received U.S. patents since 1977. Data are presented by the year in which the patent was granted ("Patents By Year of Grant") and the year the patented application was filed ("Patents by Year of Application").

### DATA FOR THOSE APPLICATIONS WHICH WERE FILED BUT NEVER ISSUED (ROUGHLY 25% OF TOTAL FILINGS) ARE NOT INCLUDED IN THIS REPORT.

Since the average time period between filing for a patent and the issuing of the patent (i.e., a patent's "pendency") is now about 24 months, the patented application data for applications filed from **1998** to **DECEMBER 2001** are incomplete.\*\* This is because a significant number of the applications filed from **1998** to **DECEMBER 2001**, which will ultimately become patents, were still pending in **DECEMBER 2001**. Since they had not yet become patents at the time this report was prepared, they were not included in this report.

Patented application data are of significant value since the date an application was filed more accurately reflects when the technology was developed. Additionally, fluctuations in data based on application date are much more likely to reflect changes in technological activity, since such fluctuations would for the most part be immune from changes in PTO processing such as

occurred in 1986 when the PTO issued fewer patents than would normally have been expected due to a lack of funds to print patents. Note that a patent's "pendency" can be quite variable from one patent to another thereby affecting the date of patent grant. Such variation in pendency is determined by many factors, including PTO workload (which varies between technologies), budget and manpower levels, patent printing schedules, etc.

"**Patents Granted By Date of Patent Application**", as shown in the "**Pre 1988**" column, correspond to patent grants in the report which were filed prior to **1988**.

---

#### Parts of the Report

**Parts A1 and A2** present tables which show, by number and percent, the patent activity in the technology discipline. Part A1 presents data by year of patent grant ("Patents Granted By Date of Patent Grant"). Part A2 redistributes grant data by year of patent application ("Patents Granted By Date of Patent Application"). The location of patent origin is determined by the residence of the first-named inventor at the time of grant.

**Patent ownership** information reflects ownership at the time of patent grant and does not include subsequent changes in ownership. If more than one assignee was declared at the time of grant, the patent ownership is attributed to the first-named assignee. The U.S. and Foreign Corporations ownership categories count predominantly corporate patents; however, patents assigned to other organizations such as small businesses, nonprofit organizations, universities, etc. are also included in this category. While U.S. Government patent ownership includes only patents granted to the Federal Government, no such distinction is made for the Foreign Government ownership category.

**Part B** is a ranked listing of national and international organizations (i.e., corporations, universities, government agencies) which have received U.S. patents since **1977**.\* Data line 1 for each listed organization ("Patents By Year of Grant") distributes counts of patent grants by year of grant. Data line 2 for each organization ("Patents By Year of Application") redistributes those same patent grants by year in which the patented applications were filed. Information on patent ownership reflects ownership at the time of patent grant. Although a substantial effort has been made to combine name variations into a single organizational name, many organizations continue to have patents listed under more than one organizational name.

---

\* The term "patent", as used above, refers to "utility" patents. Other patent documents (i.e., design, plant and reissue patents, statutory invention registrations, defensive publications) are not included in this profile report.

\*\* As of **12/31/2001**, utility patent application data were approximately 79% complete for patent applications filed in 1998, 53% complete for 1999 filings and 16% complete for 2000 filings. They were essentially complete for applications filed prior to 1998.

## CHEMICAL, ELECTRICAL, MECHANICAL CLASSES

DECEMBER 2001

CHEMICAL	8	23	44	48	51	55	65	71	75	95	96	106	117	127
	136	148	149	156	159	162	196	201	202	203	204	205	208	209
	210	216	252	260	261	264	376	419	420	422	423	424	426	427
	428	429	430	435	436	438	442	501	502	504	507	508	510	512
	514	516	518	520	521	522	523	524	525	526	527	528	530	532
	534	536	540	544	546	548	549	552	554	556	558	560	562	564
	568	570	585	588	800	930	976	987						

The following subclasses are also Chemical:

134/1-42; 131/274-279; 505/100-126, 300-512, 725-785, 800-824, 951

ELECTRICAL	174	178	191	200	218	219	235	250	257	290	307	310	313	314
	315	318	320	322	323	324	326	327	329	330	331	332	333	334
	335	336	337	338	340	341	342	343	345	346	348	349	355	358
	360	361	362	363		365	367	368	369	370		372	373	375
	377	378	379	380	381	382	383	386	388	392	396	399	455	503
	505	700	701	702	703	704	705	706	707	708	709	710	711	712
	713	714	716	717	725	902								

The following subclasses are also Electrical:

84/600-746; 385/1-52; 359/1-195, 237-361, 558-590, 901-902; 968/876-977; 984/300-398

MECHANICAL	2	4	5	7		12	14	15	16		19	24	26	
	27	28	29	30	33	34	36	37	38	40	42	43	47	49
	52	53	54	56	57	59	60	62	63	66	68	69	70	
	72	73	74	76	79	81	82	83	84	86	87	89	91	92
	99	100	101	102	104	105	108	109	110	111	112	114	116	118
	119	122	123	124	125	126	128		131	132	134	135	137	138
	139	140	141	142	144	147	150	152	157	160	163	164	165	166
	168	169	171	172	173	175	177	180	181	182	184	185	186	187
	188	190	192	193	194	198	199	206	211	212	213	215	217	220
	221	222	223	224	225	226	227	228	229	231	232	234	236	237
	238	239	241	242	244	245	246	248	249	251	254	256	258	266
	267	269	270	271		273	276	277	278	279	280	281	283	285
	289	291	292	293	294	295	296	297	298	299	300	301	303	305
	312	347	351	352	353	356	359	366	374	384	385	400	401	402
	403	404	405	406	407	408	409	410	411	412	413	414	415	416
	417	418	425	431	432	433	434	439	440	441	445	446	449	450
	451	452	453	454	460	462	463	464	470	472	473	474	475	476
	477	482	483	492	493	494	600	601	602	604	606	607	623	901
	968	984												

The following subclasses are also Mechanical:

209/3.1-3.3, 44-44.4, 509-707, 900-942; 8/147-159

TECHNOLOGY ASSESSMENT AND FORECAST PROGRAM TECHNOLOGY DISCIPLINES FOR  
 U.S. PATENT CLASSIFICATION SYSTEM CLASSES AS OF DECEMBER 2001  
CHEMICAL, ELECTRICAL, MECHANICAL

| Class |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2M    | 74M   | 141M  | 206M  | 267M  | 336E  | 400M  | 454M  | 552C  |
| 4M    | 75C   | 142M  | 208C  | 269M  | 337E  | 401M  | 455E  | 554C  |
| 5M    | 76M   | 144M  | 209C* | 270M  | 338E  | 402M  | 460M  | 556C  |
| 7M    | 79M   | 147M  | 210C  | 271M  | 340E  | 403M  | 462M  | 558C  |
| 8C*   | 81M   | 148C  | 211M  | 273M  | 341E  | 404M  | 463M  | 560C  |
| 12M   | 82M   | 149C  | 212M  | 276M  | 342E  | 405M  | 464M  | 562C  |
| 14M   | 83M   | 150M  | 213M  | 277M  | 343E  | 406M  | 470M  | 564C  |
| 15M   | 84M*  | 152M  | 215M  | 278M  | 345E  | 407M  | 472M  | 568C  |
| 16M   | 86M   | 156C  | 216C  | 279M  | 346E  | 408M  | 473M  | 570C  |
| 19M   | 87M   | 157M  | 217M  | 280M  | 347M  | 409M  | 474M  | 585C  |
| 23C   | 89M   | 159C  | 218E  | 281M  | 348E  | 410M  | 475M  | 588C  |
| 24M   | 91M   | 160M  | 219E  | 283M  | 349E  | 411M  | 476M  | 600M  |
| 26M   | 92M   | 162C  | 220M  | 285M  | 351M  | 412M  | 477M  | 601M  |
| 27M   | 95C   | 163M  | 221M  | 289M  | 352M  | 413M  | 482M  | 602M  |
| 28M   | 96C   | 164M  | 222M  | 290E  | 353M  | 414M  | 483M  | 604M  |
| 29M   | 99M   | 165M  | 223M  | 291M  | 355E  | 415M  | 492M  | 606M  |
| 30M   | 100M  | 166M  | 224M  | 292M  | 356M  | 416M  | 493M  | 607M  |
| 33M   | 101M  | 168M  | 225M  | 293M  | 358E  | 417M  | 494M  | 623M  |
| 34M   | 102M  | 169M  | 226M  | 294M  | 359M* | 418M  | 501C  | 700E  |
| 36M   | 104M  | 171M  | 227M  | 295M  | 360E  | 419C  | 502C  | 701E  |
| 37M   | 105M  | 172M  | 228M  | 296M  | 361E  | 420C  | 503E* | 702E  |
| 38M   | 106C  | 173M  | 229M  | 297M  | 362E  | 422C  | 504C  | 703E  |
| 40M   | 108M  | 174E  | 231M  | 298M  | 363E  | 423C  | 505E* | 704E  |
| 42M   | 109M  | 175M  | 232M  | 299M  | 365E  | 424C  | 507C  | 705E  |
| 43M   | 110M  | 177M  | 234M  | 300M  | 366M  | 425M  | 508C  | 706E  |
| 44C   | 111M  | 178E  | 235E  | 301M  | 367E  | 426C  | 510C  | 707E  |
| 47M   | 112M  | 180M  | 236M  | 303M  | 368E  | 427C  | 512C  | 708E  |
| 48C   | 114M  | 181M  | 237M  | 305M  | 369E  | 428C  | 514C  | 709E  |
| 49M   | 116M  | 182M  | 238M  | 307E  | 370E  | 429C  | 516C  | 710E  |
| 51C   | 117C  | 184M  | 239M  | 310E  | 372E  | 430C  | 518C  | 711E  |
| 52M   | 118M  | 185M  | 241M  | 312M  | 373E  | 431M  | 520C  | 712E  |
| 53M   | 119M  | 186M  | 242M  | 313E  | 374M  | 432M  | 521C  | 713E  |
| 54M   | 122M  | 187M  | 244M  | 314E  | 375E  | 433M  | 522C  | 714E  |
| 55C   | 123M  | 188M  | 245M  | 315E  | 376C  | 434M  | 523C  | 716E  |
| 56M   | 124M  | 190M  | 246M  | 318E  | 377E  | 435C  | 524C  | 717E  |
| 57M   | 125M  | 191E  | 248M  | 320E  | 378E  | 436C  | 525C  | 725E  |
| 59M   | 126M  | 192M  | 249M  | 322E  | 379E  | 438C  | 526C  | 800C  |
| 60M   | 127C  | 193M  | 250E  | 323E  | 380E  | 439M  | 527C  | 901M  |
| 62M*  | 128M  | 194M  | 251M  | 324E  | 381E  | 440M  | 528C  | 902E  |
| 63M   | 131M* | 196C  | 252C  | 326E  | 382E  | 441M  | 530C  | 930C  |
| 65C   | 132M  | 198M  | 254M  | 327E  | 383E  | 442C  | 532C  | 968M* |
| 66M   | 134M* | 199M  | 256M  | 329E  | 384M  | 445M  | 534C  | 976C  |
| 68M   | 135M  | 200E  | 257E  | 330E  | 385M* | 446M  | 536C  | 984M* |
| 69M   | 136C  | 201C  | 258M  | 331E  | 386E  | 449M  | 540C  | 987C  |
| 70M   | 137M  | 202C  | 260C  | 332E  | 388E  | 450M  | 544C  |       |
| 71C   | 138M  | 203C  | 261C  | 333E  | 392E  | 451M  | 546C  |       |
| 72M   | 139M  | 204C  | 264C  | 334E  | 396E  | 452M  | 548C  |       |
| 73M   | 140M  | 205C  | 266M  | 335E  | 399E  | 453M  | 549C  |       |

\*8/147-159 are mechanical

\*84/600-746 are electrical

\*131/274-279 are chemical

\*134/1-42 are chemical

\*209/3.1-3.3, 44-44.4, 509-707, 900-942 are mechanical

\*359/1-195, 237-361, 558-590, 901-902 are electrical

\*385/1-52 are electrical

\*505/100-126, 300-512, 725-785, 800-824, 951 are chemical

\*968/876-977 are electrical

\*984/300-398 are electrical

April 9, 2002

cem1201.doc

USPTO. TPD-TAF Branch

## Part A1

### Patent Grants as Distributed By Year of Patent Grant

## ---- Patents Granted By Date Of Patent Grant (Granted: Jan 01, 1977 - Dec 31, 2001) ----

	NUMBER OF PATENTS															
	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
Total	345770	37207	44223	42013	44604	43573	42445	44191	42249	44665	44256	56813	58737	61995	63103	1015844
U.S. Origin	209897	20385	25148	23789	25605	25427	25222	26893	25802	27224	26064	33140	34111	34987	34379	598073
Foreign Origin	135873	16822	19075	18224	18999	18146	17223	17298	16447	17441	18192	23673	24626	27008	28724	417771
JAPAN	38212	5866	6648	6482	6867	6847	6521	6245	5756	6238	6565	8461	8842	9387	9917	138854
GERMANY	32806	3729	4077	3766	3817	3528	3289	3275	3015	3181	3249	4200	4423	4992	5339	86686
FRANCE	10859	1216	1406	1268	1300	1326	1196	1159	1087	1035	1093	1337	1386	1448	1514	28630
UNITED KINGDOM	11980	1130	1316	1187	1202	959	911	872	946	948	973	1190	1178	1371	1445	27608
CANADA	7719	894	1141	1124	1237	1125	1095	1153	1172	1127	1252	1452	1503	1629	1698	25321
TAIWAN	970	358	454	523	686	712	818	995	984	1137	1135	1560	1817	2237	2483	16869
ITALY	4888	609	685	671	635	700	623	601	530	544	586	759	707	858	769	14165
SWITZERLAND	5911	611	649	623	664	591	496	558	442	497	460	589	553	637	664	13945
SWEDEN	5577	511	502	474	469	377	371	401	439	403	399	616	613	742	761	12655
NETHERLANDS	2810	289	344	324	333	296	244	279	255	247	258	358	391	423	450	7301
AUSTRALIA	2108	285	325	287	271	261	234	284	261	294	267	405	383	395	472	6532
AUSTRIA	2095	198	245	266	209	218	190	179	203	220	190	201	257	298	322	5291
SOUTH KOREA	167	45	62	76	105	143	211	203	246	360	466	803	792	677	655	5011
ISRAEL	812	133	150	140	151	166	123	150	155	164	211	287	257	262	369	3530
FINLAND	922	133	120	156	156	163	118	123	138	178	188	219	217	214	216	3261
BELGIUM	924	117	120	121	109	109	91	97	101	118	109	197	160	172	198	2743
DENMARK	982	89	108	77	119	94	94	96	86	114	138	155	168	151	184	2655
SPAIN	561	81	81	86	104	74	94	85	95	78	92	122	128	163	159	2003
NORWAY	619	74	84	74	61	58	67	73	75	71	86	119	131	147	164	1903
U.S.S.R.	1376	61	88	100	99	35	38	21	7	2	1	1				1829
SOUTH AFRICA	562	66	91	66	57	55	56	69	76	65	50	64	62	60	54	1453
NEW ZEALAND	376	45	34	39	23	25	27	19	27	29	52	61	64	46	69	936
CHINA, HONG KONG S.A.R.	136	21	22	26	28	31	34	33	49	53	44	88	81	86	126	858
BRAZIL	182	19	23	29	45	27	40	41	39	44	44	44	58	62	79	776
IRELAND	138	18	30	24	22	24	26	26	15	32	24	35	46	58	52	570
MEXICO	212	21	22	17	13	21	16	20	21	21	24	33	38	40	49	568
HUNGARY	304	23	46	28	18	17	8	7	8	9	9	13	16	11	14	531
LUXEMBOURG	179	24	24	12	26	18	22	19	17	14	16	10	15	25	27	448
ARGENTINA	141	13	15	11	8	15	21	23	20	16	23	28	35	36	37	442
CHINA P. REP.	22	25	25	20	25	15	22	21	25	15	12	13	37	53	101	431
CZECHOSLOVAKIA	286	15	19	23	18	3	5	10	10	3	2	3	1	3	2	403
RUSSIAN FEDERATION							1	15	36	43	31	54	42	60	77	359
SINGAPORE	32	6	11	5	12	12	15	22	17	27	19	27	34	50	64	353
LIECHTENSTEIN	109	10	11	12	9	12	5	12	9	5	8	10	5	12	11	240
VENEZUELA	66	10	7	7	12	12	15	7	13	11	5	5	12	11	11	204
POLAND	117	3	5	10	7	3	3	4	2	7	3	6	8	5	6	189
Others ( 109 )	713	74	85	70	82	74	83	101	70	91	108	148	166	187	166	2218

## Ownership:

U.S. Corporations	129993	12698	15266	14284	15497	15726	15843	17084	16435	17329	16949	21668	22646	23936	24321	379675
U.S. Government	4491	229	310	307	409	373	382	383	295	253	276	293	265	278	284	8828
U.S. Individuals	80456	7890	10114	9777	10357	9825	9512	9952	9653	10250	9438	11990	12142	11732	10764	223852
Foreign Corporations	101253	13165	14827	14117	14621	14319	13559	13390	12594	13587	14235	18643	19476	21614	23261	322661
Foreign Government	1411	146	134	131	133	142	143	97	83	86	81	57	36	20	19	2719
Foreign Individuals	28166	3079	3572	3397	3587	3188	3006	3285	3189	3160	3277	4162	4415	4454	78109	



## Part A2

Patent Grants as Distributed By Year of Patent Application

## ---- Patents Granted By Date Of Patent Application (Granted: Jan 01, 1977 - Dec 31, 2001) ----

	NUMBER OF PATENTED APPLICATIONS															
	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total

Total	409265	41009	42796	44618	44098	44884	46553	49402	52522	54678	60586	58002	49506	17201	724	1015844
U.S. Origin	244695	23204	24181	26031	26088	27055	28604	29879	31923	31386	34854	32956	27432	9410	375	598073
Foreign Origin	164570	17805	18615	18587	18010	17829	17949	19523	20599	23292	25732	25046	22074	7791	349	417771
JAPAN	47990	6271	6943	6826	6808	6780	6492	6987	7474	8511	9629	8580	6918	2532	113	138854
GERMANY	39143	3709	3782	3761	3403	3381	3263	3541	3642	4108	4613	4604	4380	1313	43	86686
FRANCE	13018	1315	1270	1283	1260	1213	1206	1168	1245	1315	1438	1341	1172	362	24	28630
UNITED KINGDOM	14090	1170	1131	1096	938	909	933	1112	1131	1180	1192	1337	1055	319	15	27608
CANADA	9221	1099	1170	1139	1221	1106	1291	1295	1429	1427	1501	1596	1362	441	23	25321
TAIWAN	1493	422	505	673	769	847	1043	1166	1227	1435	1652	1943	2435	1174	85	16869
ITALY	5895	699	636	665	650	662	562	637	615	744	788	768	616	217	11	14165
SWITZERLAND	6947	629	685	604	560	519	505	511	570	576	568	607	500	161	3	13945
SWEDEN	6400	473	461	407	399	413	460	476	452	565	681	700	585	177	6	12655
NETHERLANDS	3317	336	323	311	272	263	307	290	284	349	436	364	322	126	1	7301
AUSTRALIA	2651	278	259	281	263	260	305	303	322	411	375	412	305	106	1	6532
AUSTRIA	2439	252	223	231	211	182	189	232	237	210	234	299	254	96	2	5291
SOUTH KOREA	249	69	94	133	172	217	227	395	475	787	819	658	529	181	6	5011
ISRAEL	1056	140	147	148	146	145	163	220	245	237	275	281	249	77	1	3530
FINLAND	1149	125	151	168	143	128	136	188	215	217	217	200	169	52	3	3261
BELGIUM	1119	109	124	112	96	104	108	115	144	174	178	164	147	49		2743
DENMARK	1142	94	75	126	105	77	93	128	156	164	158	167	122	46	2	2655
SPAIN	693	80	95	95	78	101	91	99	99	120	149	137	110	54	2	2003
NORWAY	748	79	50	68	66	67	84	87	95	119	136	127	133	44		1903
U.S.S.R.	1507	76	89	78	42	27	5	4	1							1829
SOUTH AFRICA	702	48	71	59	53	62	92	77	50	62	56	61	50	10		1453
NEW ZEALAND	451	26	36	24	27	20	24	38	54	60	71	44	40	21		936
CHINA, HONG KONG S.A.R.	169	26	23	34	29	36	38	64	57	79	60	96	100	44	3	858
BRAZIL	219	18	44	33	39	37	41	61	42	49	58	55	59	21		776
IRELAND	179	26	22	24	26	23	19	38	30	37	50	56	27	13		570
MEXICO	241	21	20	14	17	25	19	24	28	31	40	44	28	16		568
HUNGARY	358	36	23	17	9	6	7	10	13	14	8	18	6	6		531
LUXEMBOURG	217	19	18	20	22	20	15	24	14	15	16	23	18	7		448
ARGENTINA	170	6	6	19	20	18	25	20	24	29	32	41	24	8		442
CHINA P. REP.	66	22	17	15	27	22	32	15	10	16	36	42	71	38	2	431
CZECHOSLOVAKIA	310	30	14	8	5	10	12	3	2	3	1	2	3			403
RUSSIAN FEDERATION						11	36	43	44	48	55	40	73	7	2	359
SINGAPORE	44	7	12	6	13	27	18	27	28	25	30	39	59	18		353
LIECHTENSTEIN	128	9	12	9	9	11	8	8	5	13	10	7	8	3		240
VENEZUELA	82	4	6	15	18	12	11	11	5	8	8	9	12	3		204
POLAND	124	8	7	6	3	5	7	2	7	6	6	6	2			189
Others ( 109 )	843	74	71	79	91	88	84	99	133	147	156	178	127	47	1	2218

## Ownership:

U.S. Corporations	151797	14046	14666	15856	16315	17308	18309	19048	20789	20809	23562	22332	18597	6020	221	379675	
U.S. Government	5026	288	303	385	377	382	357	280	285	303	278	257	211	91	5	8828	
U.S. Individuals	93692	9380	9792	10399	9922	9883	10599	11207	11533	11110	11964	11231	9393	3593	154		223852
Foreign Corporations	123529	13909	14573	14466	14159	14114	13791	15122	16232	18467	20608	20150	17367	5909	265		322661
Foreign Government	1668	113	139	138	131	124	88	93	93	58	37	20	14	3		2719	
Foreign Individuals	33553	3273	3323	3374	3194	3073	3409	3652	3590	3931	4137	4012	3924	1585	79		78109

## ---- Patents Granted By Date Of Patent Application (Granted: Jan 01, 1977 - Dec 31, 2001) ----

## ---- PERCENT OF PATENTED APPLICATIONS ----

	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Total
--	----------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
U.S. Origin	60	57	57	58	59	60	61	60	61	57	58	57	55	55	52	59
Foreign Origin	40	43	43	42	41	40	39	40	39	43	42	43	45	45	48	41
JAPAN	12	15	16	15	15	15	14	14	14	16	16	15	14	15	16	14
GERMANY	10	9	9	8	8	8	7	7	7	8	8	8	9	8	6	9
FRANCE	3	3	3	3	3	3	3	2	2	2	2	2	2	2	3	3
UNITED KINGDOM	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	3
CANADA	2	3	3	3	3	2	3	3	3	3	2	3	3	3	3	2
TAIWAN	1	1	2	2	2	2	2	2	2	3	3	3	5	7	12	2
ITALY	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1
SWITZERLAND	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
SWEDEN	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NETHERLANDS	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
AUSTRALIA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
AUSTRIA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
SOUTH KOREA															0	0
ISRAEL														1	0	0
FINLAND															0	0
BELGIUM															0	0
DENMARK															0	0
SPAIN															0	0
NORWAY															0	0
U.S.S.R.															0	0
SOUTH AFRICA															0	0
NEW ZEALAND															0	0
CHINA, HONG KONG S.A.R.															0	0
BRAZIL															0	0
IRELAND															0	0
MEXICO															0	0
HUNGARY															0	0
LUXEMBOURG															0	0
ARGENTINA															0	0
CHINA P.REP.															0	0
CZECHOSLOVAKIA															0	0
RUSSIAN FEDERATION															0	0
SINGAPORE															0	0
LIECHTENSTEIN															0	0
VENEZUELA															0	0
POLAND															0	0
Others ( 109 )															0	0

## Ownership:

U.S. Corporations	37	34	34	36	37	39	39	39	40	38	39	39	38	35	31	37
U.S. Government	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
U.S. Individuals	23	23	23	23	22	22	23	23	22	20	20	19	19	21	21	22
Foreign Corporations	30	34	34	32	32	31	30	31	31	34	34	35	35	34	37	32
Foreign Government															0	0
Foreign Individuals	8	8	8	8	7	7	7	7	7	7	7	7	8	9	11	8

**Part B**

**Ranked Listing of Organizations with PATENT GRANTS**

**As Distributed By Year of Patent Grant**

**and As Distributed By Year of Patent Application**

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 1

---- Organizational Patenting (Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

**GENERAL MOTORS CORPORATION**

Patents By Year of Grant:	2310	290	305	281	349	302	325	247	206	206	205	239	213	191	110	5779
Patents By Year of Application:	2685	285	317	297	329	329	260	235	224	245	206	219	97	48	3	5779

**GENERAL ELECTRIC COMPANY**

Patents By Year of Grant:	2015	134	169	179	171	272	354	363	211	240	203	222	184	292	349	5358
Patents By Year of Application:	2273	178	145	265	298	350	297	265	259	193	228	278	273	53	3	5358

**CANON KABUSHIKI KAISHA**

Patents By Year of Grant:	1000	172	227	191	184	264	266	210	203	317	253	380	422	526	542	5157
Patents By Year of Application:	1328	179	210	243	278	293	306	376	517	410	517	256	201	42	1	5157

**HONDA GIKEN KOGYO KABUSHIKI KAISHA (HONDA MOTOR CO., LTD.)**

Patents By Year of Grant:	1480	323	284	303	193	142	173	146	160	197	227	242	306	295	367	4838
Patents By Year of Application:	2014	274	236	143	160	172	145	201	259	251	301	327	220	133	2	4838

**ROBERT BOSCH GMBH**

Patents By Year of Grant:	1785	149	135	152	182	191	270	205	194	181	172	216	228	321	389	4770
Patents By Year of Application:	2016	116	174	192	240	257	182	213	186	242	282	251	335	83	1	4770

**NISSAN MOTOR COMPANY, LIMITED**

Patents By Year of Grant:	2304	174	196	263	236	239	140	89	62	65	90	105	147	161	169	4440
Patents By Year of Application:	2614	223	247	226	197	102	69	76	92	124	129	159	131	50	1	4440

**TOYOTA JIDOSHA K.K.**

Patents By Year of Grant:	2022	241	192	112	118	109	100	97	108	93	159	266	251	214	220	4302
Patents By Year of Application:	2369	132	115	113	103	119	102	100	131	266	334	206	156	53	3	4302

**HITACHI, LTD**

Patents By Year of Grant:	1520	202	189	188	193	198	170	150	142	132	159	136	115	151	238	3883
Patents By Year of Application:	1850	196	234	191	158	167	148	158	158	144	123	138	138	74	6	3883

**MITSUBISHI DENKI KABUSHIKI KAISHA**

Patents By Year of Grant:	696	170	202	226	234	237	179	173	163	111	145	137	147	146	191	3157
Patents By Year of Application:	941	227	237	226	235	190	189	123	146	151	160	137	126	62	7	3157

**CATERPILLAR INC.**

Patents By Year of Grant:	1520	35	51	40	64	46	88	88	102	151	151	148	184	275	201	3144
Patents By Year of Application:	1581	37	47	62	62	97	92	156	161	184	203	224	197	39	2	3144

**INTERNATIONAL BUSINESS MACHINES CORPORATION**

Patents By Year of Grant:	1005	65	55	72	79	99	108	108	108	117	124	189	209	238	239	2815
Patents By Year of Application:	1098	76	64	85	114	135	107	132	160	175	193	243	176	54	3	2815

----- Technology Assessment and Forecast Report -----

**MECHANICAL CLASSES (12-31-2001)**

Page B - 2

#### ----- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

## ---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 3

## ---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	-------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

## MINNESOTA MINING AND MANUFACTURING COMPANY

Patents By Year of Grant:	619	98	114	99	139	127	86	151	154	142	139	178	78	18	2	2144
Patents By Year of Application:	791	112	113	110	129	120	159	197	154	150	94	14	1	0	0	2144

## AISIN SEIKI KABUSHIKI KAISHA

Patents By Year of Grant:	763	115	123	96	124	108	82	55	49	72	62	101	101	85	79	2015
Patents By Year of Application:	950	109	99	123	96	68	60	69	69	102	101	93	67	8	1	2015

## DAIMLER-BENZ AKTIENGESELLSCHAFT

Patents By Year of Grant:	725	83	114	94	91	78	102	73	78	99	117	176	119	24	8	1981
Patents By Year of Application:	867	95	94	90	80	93	83	102	118	157	148	53	1	0	0	1981

## OLYMPUS OPTICAL CO., LTD.

Patents By Year of Grant:	626	96	93	76	70	81	84	73	76	85	99	133	109	143	112	1956
Patents By Year of Application:	780	80	78	83	94	84	101	92	115	101	107	122	95	24	0	1956

## UNITED STATES OF AMERICA, ARMY

Patents By Year of Grant:	1052	43	61	57	69	55	66	82	61	47	67	68	53	48	62	1891
Patents By Year of Application:	1148	52	60	55	60	83	69	53	67	68	62	48	41	23	2	1891

## BOEING COMPANY

Patents By Year of Grant:	826	93	117	87	94	91	53	39	42	38	57	83	75	79	87	1861
Patents By Year of Application:	1018	106	90	76	72	46	48	21	99	77	59	74	55	20	0	1861

## DEERE + COMPANY

Patents By Year of Grant:	825	80	100	82	83	57	84	54	63	59	51	63	77	66	108	1852
Patents By Year of Application:	956	79	76	72	72	75	68	57	64	60	69	71	99	33	1	1852

## ALLIED-SIGNAL INC.

Patents By Year of Grant:	655	97	110	94	110	116	96	106	78	84	57	60	55	67	65	1850
Patents By Year of Application:	820	94	113	108	113	120	75	80	75	58	67	64	58	3	2	1850

## EATON CORPORATION

Patents By Year of Grant:	658	64	85	76	73	98	88	80	87	91	71	61	102	93	60	1787
Patents By Year of Application:	769	68	78	79	82	104	99	92	69	80	84	89	66	28	0	1787

## U.S. PHILIPS CORPORATION

Patents By Year of Grant:	773	87	100	90	95	61	42	47	47	47	44	81	98	72	66	1750
Patents By Year of Application:	932	80	94	79	55	47	45	57	57	71	109	59	45	20	0	1750

## YAZAKI CORP.

Patents By Year of Grant:	23	24	44	77	51	83	92	88	80	125	186	203	221	223	222	1742
Patents By Year of Application:	66	50	63	48	102	95	101	136	175	220	228	207	154	89	8	1742

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 4

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

MAZDA MOTOR CORPORATION

Patents By Year of Grant:	453	139	126	108	174	178	138	102	79	38	31	38	30	38	29	1701
Patents By Year of Application:	661	114	130	182	174	116	94	71	30	34	32	33	17	13	0	1701

NIPPONDENSO CO., LTD.

Patents By Year of Grant:	613	62	61	39	35	53	68	94	98	156	147	108	28	13	7	1582
Patents By Year of Application:	717	40	35	45	55	93	110	127	184	141	22	8	5	0	0	1582

MEDTRONIC INC.

Patents By Year of Grant:	250	15	10	27	28	59	54	100	72	74	78	215	174	199	158	1513
Patents By Year of Application:	281	15	32	48	53	77	97	82	106	168	206	188	135	25	0	1513

BROTHER KOGYO KABUSHIKI KAISHA

Patents By Year of Grant:	162	44	82	72	115	109	70	81	73	64	68	114	155	136	101	1446
Patents By Year of Application:	264	55	93	116	81	106	73	91	75	138	129	153	57	14	1	1446

AT&T CORP.

Patents By Year of Grant:	831	49	64	66	57	74	82	58	66	45	1	5	7	8	9	1422
Patents By Year of Application:	913	52	69	63	76	75	79	55	11	4	5	10	9	1	0	1422

CHRYSLER MOTORS CORPORATION

Patents By Year of Grant:	230	44	70	77	63	38	52	80	89	120	107	107	158	121	27	1383
Patents By Year of Application:	285	72	75	62	39	70	86	121	127	134	147	151	11	3	0	1383

FUJI PHOTO FILM CO., LTD

Patents By Year of Grant:	267	51	100	91	75	85	61	53	61	69	63	94	88	105	106	1369
Patents By Year of Application:	385	86	87	68	82	70	66	73	58	96	111	83	71	31	2	1369

WHITAKER CORPORATION

Patents By Year of Grant:	0	0	0	0	0	0	55	149	169	176	165	169	184	213	50	1330
Patents By Year of Application:	0	0	0	0	4	89	191	208	180	196	210	180	67	5	0	1330

SAMSUNG ELECTRONICS CO., LTD.

Patents By Year of Grant:	2	2	5	12	19	39	73	43	61	83	85	228	252	241	157	1302
Patents By Year of Application:	8	6	23	35	47	64	57	88	93	215	273	255	101	37	0	1302

YAMAHA HATSUDOKI KABUSHIKI KAISHA, YAMAHA MOTOR CO., LTD.

Patents By Year of Grant:	313	38	24	61	69	80	81	52	53	69	68	119	93	95	77	1292
Patents By Year of Application:	378	31	69	81	73	78	60	78	76	117	111	74	54	12	0	1292

LUCAS INDUSTRIES PUBLIC LTD. COMPANY

Patents By Year of Grant:	601	59	75	66	55	30	34	25	38	43	43	45	34	38	56	1242
Patents By Year of Application:	704	67	56	49	33	27	31	43	51	51	36	47	34	12	1	1242

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 5

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

UNITED STATES OF AMERICA, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patents By Year of Grant:	542	52	61	56	66	63	74	57	45	33	34	30	43	35	38	1229
Patents By Year of Application:	616	67	53	62	77	65	62	41	41	38	41	34	22	8	2	1229

E. I. DU PONT DE NEMOURS AND COMPANY

Patents By Year of Grant:	566	56	65	59	85	72	76	59	33	39	20	26	19	30	20	1225
Patents By Year of Application:	653	54	77	83	83	68	44	33	33	22	32	22	16	5	0	1225

CARRIER CORPORATION

Patents By Year of Grant:	417	41	45	44	67	54	48	55	58	38	35	51	51	91	86	1181
Patents By Year of Application:	487	41	48	59	60	42	59	58	41	54	55	80	57	40	0	1181

NIKON CORPORATION

Patents By Year of Grant:	235	27	20	18	25	23	28	33	50	105	151	195	116	77	73	1176
Patents By Year of Application:	268	22	22	22	28	34	48	107	151	176	150	68	56	21	3	1176

PROCTER + GAMBLE COMPANY

Patents By Year of Grant:	210	22	31	26	42	31	38	59	50	99	99	105	136	108	103	1159
Patents By Year of Application:	259	24	33	33	31	54	61	89	115	151	139	98	58	14	0	1159

UNITED STATES OF AMERICA, DEPARTMENT OF ENERGY

Patents By Year of Grant:	652	49	54	61	57	56	45	50	28	22	24	22	4	14	20	1158
Patents By Year of Application:	732	53	65	54	53	48	47	15	27	24	10	11	11	8	0	1158

SONY CORPORATION

Patents By Year of Grant:	160	28	28	23	26	43	60	67	85	91	106	116	100	125	94	1152
Patents By Year of Application:	207	27	29	27	56	79	72	105	110	128	121	93	83	15	0	1152

RICOH COMPANY, LTD.

Patents By Year of Grant:	387	44	58	53	65	67	46	52	44	42	37	57	56	59	78	1145
Patents By Year of Application:	466	53	56	81	48	60	53	47	43	54	64	54	50	15	1	1145

ASAHI KOGAKU KOGYO KABUSHIKI KAISHA

Patents By Year of Grant:	138	26	19	40	43	44	82	68	46	76	57	107	121	111	127	1105
Patents By Year of Application:	175	29	52	55	64	87	50	80	62	93	103	121	106	27	1	1105

HONEYWELL INC.

Patents By Year of Grant:	473	49	72	52	58	43	45	60	58	40	23	38	46	35	12	1104
Patents By Year of Application:	557	71	49	58	57	52	68	37	31	29	55	29	11	0	0	1104

ROCKWELL INTERNATIONAL CORPORATION

Patents By Year of Grant:	661	48	45	44	53	59	47	50	28	30	15	4	3	0	0	1087
Patents By Year of Application:	756	44	48	41	61	47	37	27	18	4	4	0	0	0	0	1087

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 6

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----																
	Pre															
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
<b>TRW INC.</b>																
Patents By Year of Grant:	336	21	32	21	18	25	43	37	39	49	55	64	76	119	132	1067
Patents By Year of Application:	370	31	20	22	43	43	37	31	67	76	96	111	86	34	0	1067
<b>ILLINOIS TOOL WORKS INC.</b>																
Patents By Year of Grant:	299	26	17	26	38	37	58	23	43	58	69	95	71	86	117	1063
Patents By Year of Application:	336	17	25	42	36	48	41	58	80	81	76	84	103	34	2	1063
<b>HEIDELBERGER DRUCKMASCHINEN AG</b>																
Patents By Year of Grant:	130	17	24	19	52	56	38	57	91	82	82	121	90	112	88	1059
Patents By Year of Application:	163	26	33	59	32	47	97	90	113	101	96	115	74	13	0	1059
<b>HALLIBURTON CO.</b>																
Patents By Year of Grant:	412	48	53	47	44	46	61	140	61	72	23	19	0	0	0	1026
Patents By Year of Application:	467	59	56	40	58	109	107	58	47	21	4	0	0	0	0	1026
<b>MOTOROLA, INC.</b>																
Patents By Year of Grant:	245	31	32	32	51	49	57	81	70	60	66	73	72	63	44	1026
Patents By Year of Application:	290	24	46	52	59	65	83	76	81	80	76	49	27	18	0	1026
<b>UNITED STATES OF AMERICA, AIR FORCE</b>																
Patents By Year of Grant:	566	37	61	25	41	55	39	40	16	18	18	27	26	21	25	1015
Patents By Year of Application:	662	37	26	51	41	36	26	24	17	22	22	19	22	10	0	1015
<b>BAXTER INTERNATIONAL INC.</b>																
Patents By Year of Grant:	411	31	56	40	51	39	40	53	48	42	30	44	56	42	31	1014
Patents By Year of Application:	492	48	45	40	43	44	58	48	50	40	49	38	18	1	0	1014
<b>MOBIL OIL CORP.</b>																
Patents By Year of Grant:	503	65	83	70	51	48	45	46	39	19	9	6	10	7	7	1008
Patents By Year of Application:	619	65	58	47	53	43	49	25	16	7	13	6	6	1	0	1008
<b>UNISYS CORPORATION</b>																
Patents By Year of Grant:	864	14	14	9	15	4	4	5	13	11	8	7	8	14	18	1008
Patents By Year of Application:	892	11	9	10	4	0	10	14	8	12	10	18	6	4	0	1008
<b>SEIKO EPSON CORPORATION</b>																
Patents By Year of Grant:	23	13	10	19	35	47	46	35	39	46	66	109	120	171	215	994
Patents By Year of Application:	42	13	40	49	42	46	58	58	91	112	151	139	118	33	2	994
<b>MINOLTA CAMERA CO., LTD.</b>																
Patents By Year of Grant:	192	39	60	54	49	52	42	32	25	39	40	46	99	115	107	991
Patents By Year of Application:	262	73	49	53	47	36	39	34	46	59	114	95	71	13	0	991

## ---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 7

## ---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	-------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

## MOLEX INCORPORATED

Patents By Year of Grant:	78	20	27	40	49	73	80	78	48	53	68	70	84	104	101	973
Patents By Year of Application:	108	27	30	61	67	88	89	66	67	78	94	90	78	30	0	973

## YOSHIDA KOGYO KABUSHIKI KAISHA

Patents By Year of Grant:	573	52	67	45	60	48	33	45	40	6	0	0	0	1	0	970
Patents By Year of Application:	651	50	50	61	45	31	61	21	0	0	0	0	0	0	0	970

## FMC CORPORATION

Patents By Year of Grant:	513	23	26	32	39	42	35	29	24	26	28	49	42	32	16	956
Patents By Year of Application:	556	33	33	36	45	27	32	26	28	44	43	25	22	6	0	956

## BRIDGESTONE CORPORATION

Patents By Year of Grant:	267	51	58	46	46	54	52	55	47	27	34	40	51	52	66	946
Patents By Year of Application:	364	50	48	57	46	61	34	39	48	39	52	58	46	4	0	946

## NEC CORPORATION

Patents By Year of Grant:	92	19	21	15	19	16	46	46	40	50	77	82	96	171	147	937
Patents By Year of Application:	123	17	21	14	21	62	42	62	72	101	133	141	105	23	0	937

## HON HAI PRECISION IND. CO., LTD.

Patents By Year of Grant:	0	0	0	0	0	0	0	0	1	10	22	36	94	366	394	923
Patents By Year of Application:	0	0	0	0	0	0	0	11	26	34	72	177	464	125	14	923

## DANA CORPORATION

Patents By Year of Grant:	202	40	44	31	39	33	40	56	37	46	69	59	65	83	75	919
Patents By Year of Application:	266	37	33	36	53	52	30	56	76	72	68	57	65	18	0	919

## UNITED STATES SURGICAL CORPORATION

Patents By Year of Grant:	75	8	6	12	26	43	43	100	141	125	83	88	85	39	25	899
Patents By Year of Application:	90	8	17	46	49	97	145	121	113	91	72	28	17	5	0	899

## TOYODA JIDOSHOEKI SEISAKUSHO KABUSHIKI KAISHA

Patents By Year of Grant:	238	36	26	12	37	19	31	43	41	46	36	68	69	86	105	893
Patents By Year of Application:	280	26	15	36	19	41	49	47	47	55	93	89	70	26	0	893

## SANSHIN KOGYO KABUSHIKI KAISHA

Patents By Year of Grant:	71	40	34	68	68	42	54	53	28	72	58	82	68	82	62	882
Patents By Year of Application:	145	56	43	61	44	51	57	47	72	97	77	78	45	9	0	882

## HUGHES AIRCRAFT COMPANY

Patents By Year of Grant:	194	42	68	55	85	70	95	103	72	54	29	13	1	0	0	881
Patents By Year of Application:	282	63	75	69	100	113	85	51	30	13	0	0	0	0	0	881

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 8

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

**TEXAS INSTRUMENTS, INCORPORATED**

Patents By Year of Grant:	217	23	35	32	38	59	44	50	59	63	68	54	48	48	40	878
Patents By Year of Application:	267	40	33	48	55	46	59	63	101	45	51	31	24	14	1	878

**SHARP KABUSHIKI KAISHA (SHARP CORPORATION)**

Patents By Year of Grant:	240	30	42	64	55	39	43	37	35	21	31	50	58	69	60	874
Patents By Year of Application:	303	51	46	60	45	41	33	25	61	41	61	64	25	18	0	874

**FUJITSU LIMITED**

Patents By Year of Grant:	113	29	25	11	29	42	42	56	55	61	63	79	84	97	83	869
Patents By Year of Application:	156	19	28	36	37	55	61	76	84	77	92	81	53	14	0	869

**FORD GLOBAL TECHNOLOGIES, INC.**

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	65	215	166	175	245	83	866
Patents By Year of Application:	0	0	0	0	0	1	5	12	35	162	192	178	182	96	3	866

**ROLLS-ROYCE PLC**

Patents By Year of Grant:	391	28	46	27	36	49	42	32	42	25	23	19	27	36	34	857
Patents By Year of Application:	469	27	39	41	33	21	43	37	28	20	36	27	28	8	0	857

**SUMITOMO ELECTRIC INDUSTRIES CO., LTD.**

Patents By Year of Grant:	174	39	60	36	39	51	50	57	54	63	43	32	37	37	73	845
Patents By Year of Application:	246	52	38	39	51	49	60	66	60	36	46	44	45	13	0	845

**DRESSER INDUSTRIES, INC.**

Patents By Year of Grant:	512	37	31	18	28	27	17	18	11	13	21	23	37	32	17	842
Patents By Year of Application:	566	27	15	33	20	17	10	22	22	25	27	43	13	2	0	842

**BRUNSWICK CORPORATION**

Patents By Year of Grant:	274	61	96	75	27	30	11	20	23	13	21	41	42	54	47	835
Patents By Year of Application:	356	106	62	19	24	9	28	20	20	32	53	38	42	26	0	835

**MANNESMANN AG**

Patents By Year of Grant:	236	27	30	36	47	51	73	44	40	32	34	45	47	54	39	835
Patents By Year of Application:	291	32	51	47	65	44	47	31	41	38	50	50	45	3	0	835

**PITNEY-BOWES, INC.**

Patents By Year of Grant:	253	25	42	48	29	51	55	40	58	39	37	46	47	25	34	829
Patents By Year of Application:	302	42	39	48	54	49	49	64	40	50	40	18	30	4	0	829

**CASE CORPORATION**

Patents By Year of Grant:	368	32	36	35	27	22	33	17	18	26	22	30	45	55	58	824
Patents By Year of Application:	410	39	28	36	22	29	17	26	33	37	37	51	50	9	0	824

----- Technology Assessment and Forecast Report -----

**MECHANICAL CLASSES (12-31-2001)**

Page B = 9

----- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre																		
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL			
<b>SUMITOMO WIRING SYSTEMS, LTD., CO.</b>																			
Patents By Year of Grant:	2	1	1	8	5	11	21	54	92	103	90	92	106	113	123	822			
Patents By Year of Application:	3	5	6	6	18	38	67	149	102	89	114	85	89	51	0	822			
<b>GOODYEAR TIRE + RUBBER COMPANY</b>																			
Patents By Year of Grant:	360	33	38	33	31	17	30	40	23	23	30	36	21	38	53	806			
Patents By Year of Application:	422	31	35	26	25	32	28	30	36	34	31	37	20	19	0	806			
<b>SHELL OIL COMPANY</b>																			
Patents By Year of Grant:	342	41	59	28	30	32	30	61	42	27	22	13	18	30	30	805			
Patents By Year of Application:	416	48	27	20	36	54	53	38	28	16	25	25	15	4	0	805			
<b>LUCENT TECHNOLOGIES INC.</b>																			
Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	25	98	85	162	242	188	800			
Patents By Year of Application:	0	0	0	0	0	1	1	21	107	71	135	259	182	23	0	800			
<b>OUTBOARD MARINE CORPORATION</b>																			
Patents By Year of Grant:	364	41	52	43	54	36	39	22	30	27	13	17	13	15	16	782			
Patents By Year of Application:	436	41	46	53	31	33	31	24	25	16	16	13	13	4	0	782			
<b>SUNDSTRAND CORPORATION</b>																			
Patents By Year of Grant:	218	53	85	93	101	87	40	24	7	13	14	15	14	4	1	769			
Patents By Year of Application:	332	113	111	74	48	24	12	12	12	15	14	2	0	0	0	769			
<b>ITT CORPORATION</b>																			
Patents By Year of Grant:	405	19	38	21	37	36	31	42	51	39	22	15	6	0	0	762			
Patents By Year of Application:	446	19	29	40	47	35	58	49	29	7	3	0	0	0	0	762			
<b>FUJI JUKOGYO KABUSHIKI KAISHA</b>																			
Patents By Year of Grant:	122	71	91	100	100	45	29	24	23	17	25	23	22	31	34	757			
Patents By Year of Application:	232	91	96	91	31	31	26	20	24	24	25	30	25	7	4	757			
<b>TEXACO INC.</b>																			
Patents By Year of Grant:	474	22	24	18	25	24	35	22	29	13	6	8	13	23	14	750			
Patents By Year of Application:	508	19	13	37	28	32	25	21	10	9	14	22	9	3	0	750			
<b>BAKER HUGHES INCORPORATED</b>																			
Patents By Year of Grant:	0	4	29	41	31	37	46	62	50	49	54	73	73	84	116	749			
Patents By Year of Application:	17	21	45	38	46	57	51	54	77	66	106	91	59	20	1	749			
<b>BENDIX CORPORATION(NOW ALLIED-SIGNAL INC.)</b>																			
Patents By Year of Grant:	744	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	744		
Patents By Year of Application:	744	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	744		

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 10

---- Organizational Patenting (Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre															
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
<b>SINGER COMPANY</b>																
Patents By Year of Grant:	734	10	0	0	0	0	0	0	0	0	0	0	0	0	0	744
Patents By Year of Application:	741	3	0	0	0	0	0	0	0	0	0	0	0	0	0	744
<b>BECTON, DICKINSON AND COMPANY</b>																
Patents By Year of Grant:	185	19	20	20	31	28	35	37	28	36	46	79	74	56	48	742
Patents By Year of Application:	221	19	22	35	21	41	37	46	42	77	76	60	37	8	0	742
<b>KABUSHIKI KAISHA KOMATSU SEISAKUSHO</b>																
Patents By Year of Grant:	381	14	19	19	24	44	52	44	35	59	28	14	3	0	0	736
Patents By Year of Application:	412	19	27	33	46	52	33	50	54	9	1	0	0	0	0	736
<b>MITSUBISHI JUKOGYO KABUSHIKI KAISHA</b>																
Patents By Year of Grant:	249	38	40	46	40	61	58	41	41	34	29	30	13	5	3	728
Patents By Year of Application:	311	35	49	43	68	53	38	38	39	34	17	1	0	2	0	728
<b>M.A.N. ROLAND DRUCKMASCHINEN AG</b>																
Patents By Year of Grant:	229	32	42	26	36	47	31	35	26	43	35	50	34	34	22	722
Patents By Year of Application:	286	25	30	41	40	38	35	35	47	39	47	31	24	4	0	722
<b>PORSCHE AG</b>																
Patents By Year of Grant:	187	40	54	47	46	42	28	26	28	40	37	25	45	35	42	722
Patents By Year of Application:	244	52	52	40	38	26	37	36	44	35	42	38	30	8	0	722
<b>WHIRLPOOL CORPORATION</b>																
Patents By Year of Grant:	299	50	38	33	49	29	35	35	26	30	13	22	26	19	12	716
Patents By Year of Application:	373	46	25	49	16	30	45	32	19	13	34	13	17	4	0	716
<b>OTIS ELEVATOR COMPANY</b>																
Patents By Year of Grant:	93	9	15	23	53	36	59	71	40	50	52	76	68	30	36	711
Patents By Year of Application:	107	10	38	55	56	57	68	65	62	66	59	28	25	15	0	711
<b>BLACK &amp; DECKER INC.</b>																
Patents By Year of Grant:	229	17	16	24	22	18	15	25	38	24	36	58	50	54	65	691
Patents By Year of Application:	257	16	18	24	18	18	32	44	35	59	56	46	53	15	0	691
<b>PHILLIPS PETROLEUM COMPANY</b>																
Patents By Year of Grant:	513	30	16	17	15	10	7	9	4	8	10	7	10	7	12	675
Patents By Year of Application:	553	12	21	11	7	10	7	9	5	12	6	12	5	5	0	675
<b>APPLIED MATERIALS, INC.</b>																
Patents By Year of Grant:	7	2	3	4	4	12	19	14	21	32	34	56	109	161	171	649
Patents By Year of Application:	13	2	5	9	15	18	24	35	64	92	122	120	92	38	0	649

## ---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 11

## ---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	-------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

## ETHICON, INC.

Patents By Year of Grant:	131	5	17	17	15	30	47	63	60	38	36	35	43	52	56	645
Patents By Year of Application:	149	10	20	18	32	65	78	45	42	41	37	53	42	12	1	645

## ATLANTIC RICHFIELD COMPANY

Patents By Year of Grant:	264	38	34	30	41	28	37	37	41	23	10	13	17	19	12	644
Patents By Year of Application:	316	23	40	41	38	36	34	33	23	8	17	24	9	2	0	644

## SOCIETE NATIONALE D'ETUDE ET DE CONSTRUCTION DE MOTEURS D'AVIATION "S.N.E.C.M.A."

Patents By Year of Grant:	179	35	26	19	25	35	34	50	40	39	31	33	34	36	27	643
Patents By Year of Application:	239	22	19	32	26	39	52	41	39	28	42	29	28	6	1	643

## SANDEN CORPORATION

Patents By Year of Grant:	121	31	51	50	57	48	35	31	19	22	18	23	40	41	35	622
Patents By Year of Application:	178	49	65	46	35	32	30	24	22	24	40	35	36	6	0	622

## MEAD CORPORATION

Patents By Year of Grant:	346	17	27	29	26	16	19	20	14	14	23	28	18	9	14	620
Patents By Year of Application:	365	34	27	23	12	24	25	13	22	19	26	15	8	7	0	620

## SULZER BROTHERS LTD.

Patents By Year of Grant:	348	50	39	51	36	44	40	5	3	1	0	0	0	0	0	617
Patents By Year of Application:	422	39	50	37	36	29	2	2	0	0	0	0	0	0	0	617

## SCI-MED LIFE SYSTEMS, INC.

Patents By Year of Grant:	1	0	3	4	6	11	20	22	39	45	31	50	80	138	163	613
Patents By Year of Application:	2	5	9	10	16	26	31	47	52	51	97	136	106	25	0	613

## DAIMLER-CHRYSLER AKTIENGESELLSCHAFT

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	0	0	0	62	242	298	602
Patents By Year of Application:	0	1	0	0	0	0	1	0	1	9	74	184	259	73	0	602

## DENSO CORPORATION

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	0	7	74	144	176	200	601
Patents By Year of Application:	0	0	0	0	0	0	0	0	2	52	171	173	151	50	2	601

## BABCOCK &amp; WILCOX COMPANY

Patents By Year of Grant:	247	21	32	25	24	22	39	30	24	38	29	27	8	10	10	586
Patents By Year of Application:	281	25	29	20	35	28	31	42	37	24	16	8	7	3	0	586

## MITSUBISHI JIDOSHA KOGYO KABUSHIKI KAISHA

Patents By Year of Grant:	141	23	34	27	25	24	24	40	39	25	28	53	53	26	23	585
Patents By Year of Application:	183	26	28	25	26	30	49	29	35	31	71	34	13	4	1	585

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 12

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

SCHLUMBERGER TECHNOLOGY CORPORATION

Patents By Year of Grant:	145	16	25	29	26	28	24	28	15	19	19	18	40	54	93	579
Patents By Year of Application:	174	21	30	39	27	18	21	20	22	28	44	54	50	30	1	579

INGERSOLL-RAND COMPANY

Patents By Year of Grant:	177	21	15	27	31	34	39	43	25	44	27	31	19	27	18	578
Patents By Year of Application:	204	14	33	32	30	41	41	35	41	35	26	24	19	3	0	578

SUMITOMO RUBBER INDUSTRIES, LTD.

Patents By Year of Grant:	48	12	15	26	30	39	34	42	54	39	41	51	33	50	58	572
Patents By Year of Application:	69	27	30	41	42	39	42	62	32	46	50	51	36	5	0	572

SANYO ELECTRIC CO., LTD.

Patents By Year of Grant:	77	19	20	29	29	31	26	24	24	26	34	67	54	65	45	570
Patents By Year of Application:	106	25	29	31	29	23	31	27	40	62	66	52	33	16	0	570

HILTI AKTIENGESELLSCHAFT

Patents By Year of Grant:	204	18	25	26	25	19	13	18	13	27	37	38	26	48	31	568
Patents By Year of Application:	232	28	25	19	16	20	15	22	32	42	32	32	40	12	1	568

ZAHNRADFABRIK FRIEDRICHSHAFEN AG

Patents By Year of Grant:	244	19	24	12	25	33	17	12	12	21	16	32	26	33	37	563
Patents By Year of Application:	281	11	27	28	28	9	11	15	21	27	30	28	35	12	0	563

NIPPON SOKEN, INC.

Patents By Year of Grant:	449	18	10	2	1	7	6	9	4	5	16	11	9	9	3	559
Patents By Year of Application:	471	7	2	3	6	9	7	6	13	12	13	9	1	0	0	559

SALOMON S.A.

Patents By Year of Grant:	55	24	34	66	51	34	30	37	31	23	21	25	51	36	41	559
Patents By Year of Application:	124	45	55	41	31	26	34	33	25	30	50	26	33	5	1	559

CORDIS CORPORATION

Patents By Year of Grant:	183	24	17	15	24	30	18	28	34	31	33	54	23	21	23	558
Patents By Year of Application:	218	16	21	29	20	21	26	53	37	51	25	19	18	4	0	558

EMERSON ELECTRIC CO.

Patents By Year of Grant:	220	16	26	22	25	23	28	25	13	24	16	20	26	31	37	552
Patents By Year of Application:	247	26	20	18	30	26	22	32	16	25	19	36	30	5	0	552

DOW CHEMICAL COMPANY

Patents By Year of Grant:	315	27	32	25	30	21	22	16	14	12	8	7	6	5	7	547
Patents By Year of Application:	356	32	25	36	23	13	18	14	6	10	7	2	3	2	0	547

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 13

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

MCDONNELL DOUGLAS CORP.

Patents By Year of Grant:	164	18	13	18	22	23	16	8	20	20	24	56	86	40	17	545
Patents By Year of Application:	193	15	18	25	25	9	13	25	23	60	93	38	5	3	0	545

RCA CORPORATION

Patents By Year of Grant:	519	24	0	0	0	0	0	0	0	0	0	0	0	0	0	543
Patents By Year of Application:	543	0	0	0	0	0	0	0	0	0	0	0	0	0	0	543

VALEO S.A.

Patents By Year of Grant:	205	32	25	31	19	39	10	17	12	9	23	50	16	21	34	543
Patents By Year of Application:	247	31	28	21	28	15	21	14	26	50	10	17	19	15	1	543

AMERICAN STANDARD, INC.

Patents By Year of Grant:	182	38	38	34	41	19	25	23	16	23	14	29	16	29	13	540
Patents By Year of Application:	229	41	32	40	23	20	21	20	23	27	23	21	18	2	0	540

SOCIETE NATIONALE INDUSTRIELLE AEROSPATIALE

Patents By Year of Grant:	144	20	23	31	38	47	39	41	24	20	16	36	20	17	20	536
Patents By Year of Application:	176	26	42	37	45	49	24	22	28	27	21	20	19	0	0	536

L'OREAL S.A.

Patents By Year of Grant:	96	16	23	19	16	19	20	27	25	36	17	36	60	58	66	534
Patents By Year of Application:	128	18	19	14	24	16	31	40	29	45	48	52	38	24	8	534

NAVISTAR INTERNATIONAL TRANSPORTATION CORP.

Patents By Year of Grant:	351	9	7	17	15	13	15	11	10	7	9	8	13	33	16	534
Patents By Year of Application:	360	16	13	16	10	15	11	10	11	12	10	27	17	6	0	534

COMBUSTION ENGINEERING INC.

Patents By Year of Grant:	377	25	12	7	6	5	5	19	11	12	5	24	13	11	1	533
Patents By Year of Application:	411	10	5	3	3	15	20	13	10	15	15	10	3	0	0	533

INSTITUT FRANCAIS DU PETROLE

Patents By Year of Grant:	139	20	27	31	26	21	26	37	26	15	28	44	21	33	37	531
Patents By Year of Application:	182	30	27	26	21	31	34	19	26	44	26	31	25	8	1	531

KOBE STEEL LTD.

Patents By Year of Grant:	202	17	20	21	39	41	22	21	17	17	20	35	22	20	17	531
Patents By Year of Application:	231	11	45	33	28	32	13	25	23	26	33	13	14	4	0	531

MICRON TECHNOLOGY, INC.

Patents By Year of Grant:	0	0	3	9	16	10	18	7	4	8	34	48	76	113	184	530
Patents By Year of Application:	0	7	10	18	8	19	7	8	24	63	87	92	121	63	3	530

----- Technology Assessment and Forecast Report -----

**MECHANICAL CLASSES (12-31-2001)**

Page B - 14

----- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 15

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre 1988 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 TOTAL													
--	---	--	--	--	--	--	--	--	--	--	--	--	--	--

**NSK LIMITED**

Patents By Year of Grant:	0	0	0	0	0	4	22	39	48	70	52	43	48	57	96	479
Patents By Year of Application:	0	0	0	0	15	30	50	57	74	42	61	67	67	15	1	479

**TRW VEHICLE SAFETY SYSTEMS, INC.**

Patents By Year of Grant:	0	5	11	10	15	16	31	35	37	83	73	36	32	44	50	478
Patents By Year of Application:	8	13	12	19	27	30	43	57	93	49	40	44	30	13	0	478

**TOYODA GOSETI KABUSHIKI KAISHA**

Patents By Year of Grant:	69	21	29	32	23	33	21	22	25	25	31	47	37	32	30	477
Patents By Year of Application:	103	26	30	19	37	22	32	24	35	50	31	40	18	10	0	477

**BORG-WARNER CORPORATION**

Patents By Year of Grant:	459	5	4	2	4	0	0	0	0	0	0	0	0	0	0	474
Patents By Year of Application:	470	1	2	1	0	0	0	0	0	0	0	0	0	0	0	474

**KAWASAKI JUKOGYO KABUSHIKI KAISHA**

Patents By Year of Grant:	231	43	27	24	18	15	9	15	14	9	6	9	13	13	28	474
Patents By Year of Application:	292	24	19	14	15	12	15	10	9	11	15	11	20	7	0	474

**G.D. SOCIETA PER AZIONI**

Patents By Year of Grant:	115	12	16	16	16	22	24	41	33	24	22	43	23	35	31	473
Patents By Year of Application:	140	14	11	24	20	40	34	32	27	29	34	30	34	4	0	473

**NCR CORPORATION**

Patents By Year of Grant:	180	27	35	28	30	19	20	11	8	6	14	29	24	25	15	471
Patents By Year of Application:	226	29	31	26	19	15	13	8	11	25	34	22	11	1	0	471

**LITTON SYSTEMS INC.**

Patents By Year of Grant:	111	22	23	23	28	17	22	28	23	18	9	34	42	36	33	469
Patents By Year of Application:	160	21	26	31	18	25	15	21	10	24	45	36	30	7	0	469

**MURATA KIKAI KABUSHIKI KAISHA**

Patents By Year of Grant:	148	25	36	24	30	29	32	29	21	19	12	10	16	20	15	466
Patents By Year of Application:	196	34	25	26	24	39	25	21	16	6	19	21	10	4	0	466

**ALFRED TEVES G.M.B.H.**

Patents By Year of Grant:	57	67	67	48	46	52	41	53	27	4	0	0	0	0	0	462
Patents By Year of Application:	181	48	46	50	38	60	29	9	1	0	0	0	0	0	0	462

**TOKYO ELECTRON LIMITED**

Patents By Year of Grant:	1	1	0	5	11	7	15	33	40	47	35	44	59	86	69	453
Patents By Year of Application:	2	3	6	10	12	20	50	49	41	57	65	80	42	14	2	453

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 16

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

SMITH INTERNATIONAL INC.

Patents By Year of Grant:	247	12	11	4	16	11	3	17	14	11	13	16	16	17	38	446
Patents By Year of Application:	261	10	8	15	8	10	13	20	12	16	30	20	19	4	0	446

DIESEL KIKI CO., LTD.

Patents By Year of Grant:	245	42	66	49	31	10	1	1	0	0	0	0	0	0	0	445
Patents By Year of Application:	313	46	53	27	5	0	1	0	0	0	0	0	0	0	0	445

NORDSON CORPORATION

Patents By Year of Grant:	142	13	20	11	21	14	16	29	25	19	28	24	29	25	26	442
Patents By Year of Application:	170	13	20	17	10	28	23	32	36	17	25	26	21	3	1	442

ALPS ELECTRIC CO., LTD.

Patents By Year of Grant:	79	54	30	22	18	22	12	9	10	13	25	24	24	46	53	441
Patents By Year of Application:	151	19	25	18	14	14	12	14	18	28	27	38	47	14	2	441

PHILIP MORRIS INCORPORATED

Patents By Year of Grant:	173	3	12	16	31	35	50	19	14	18	15	8	16	15	16	441
Patents By Year of Application:	195	9	24	27	43	35	22	17	20	7	19	12	9	2	0	441

SMS SCHLOEMANN-SIEMAG AG

Patents By Year of Grant:	93	18	25	20	19	18	11	17	12	11	17	25	44	61	47	438
Patents By Year of Application:	129	20	22	14	19	10	21	14	15	23	33	56	51	11	0	438

OTIS ENGINEERING CORPORATION

Patents By Year of Grant:	273	21	32	26	26	32	24	2	1	0	0	0	0	0	0	437
Patents By Year of Application:	309	26	24	32	35	11	0	0	0	0	0	0	0	0	0	437

CONOCO, INC.

Patents By Year of Grant:	260	37	30	16	22	20	23	8	8	3	3	1	3	1	1	436
Patents By Year of Application:	310	27	15	23	22	15	9	5	3	3	2	1	0	1	0	436

COMMISSARIAT A L'ENERGIE ATOMIQUE

Patents By Year of Grant:	236	15	22	13	7	14	11	15	7	18	18	17	15	15	10	433
Patents By Year of Application:	261	21	9	13	12	9	18	16	19	13	22	10	7	3	0	433

MATTEL INC.

Patents By Year of Grant:	211	14	5	6	8	14	17	25	7	14	11	11	21	41	28	433
Patents By Year of Application:	227	6	3	10	10	32	14	7	21	10	18	30	30	15	0	433

TOKICO LTD.

Patents By Year of Grant:	231	12	15	8	16	21	9	16	11	17	6	10	24	10	27	433
Patents By Year of Application:	252	9	14	19	16	12	14	15	10	12	22	12	22	4	0	433

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 17

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

ALUMINUM COMPANY OF AMERICA

Patents By Year of Grant:	189	19	12	18	17	13	19	27	23	22	10	27	21	12	3	432
Patents By Year of Application:	218	11	23	9	22	16	33	25	15	26	21	12	1	0	0	432

OLIN CORPORATION

Patents By Year of Grant:	237	17	17	28	24	28	11	13	15	16	5	8	3	10	0	432
Patents By Year of Application:	264	19	25	32	19	11	19	10	13	3	9	6	2	0	0	432

CHAMPION INTERNATIONAL CORPORATION

Patents By Year of Grant:	402	1	3	2	5	6	0	2	2	1	2	2	1	1	1	431
Patents By Year of Application:	404	4	2	5	5	0	1	2	2	2	2	1	1	0	0	431

COOPER INDUSTRIES INC.

Patents By Year of Grant:	125	15	26	37	50	35	27	26	25	17	22	8	7	5	2	427
Patents By Year of Application:	161	24	44	36	34	36	25	18	20	14	7	7	1	0	0	427

L'AIR LIQUIDE, SOCIETE ANONYME POUR L'ETUDE ET L'EXPLOITATION DES PROCEDES GEORGES CLAUDE

Patents By Year of Grant:	77	11	15	8	11	19	19	26	33	31	20	20	30	38	68	426
Patents By Year of Application:	96	9	8	18	15	30	24	39	27	20	32	31	55	20	2	426

TOKAI RIKA DENKI SEISAKUSHO K.K.

Patents By Year of Grant:	115	27	19	29	26	23	16	28	15	15	23	28	19	21	22	426
Patents By Year of Application:	152	24	29	21	27	21	21	16	24	30	22	15	16	8	0	426

FUJI PHOTO OPTICAL CO. LTD.

Patents By Year of Grant:	61	3	0	5	4	5	9	24	12	17	40	50	58	69	64	421
Patents By Year of Application:	64	2	3	3	16	8	25	13	34	47	43	67	66	28	2	421

WESTINGHOUSE AIR BRAKE COMPANY

Patents By Year of Grant:	83	0	0	0	9	31	16	15	23	40	23	45	50	50	36	421
Patents By Year of Application:	83	0	0	23	25	16	16	27	38	51	55	55	26	6	0	421

HALLIBURTON ENERGY SERVICES, INC.

Patents By Year of Grant:	0	0	0	0	0	0	1	0	0	0	22	60	93	114	130	420
Patents By Year of Application:	0	0	0	0	0	1	0	0	9	64	94	129	91	30	2	420

ROBERTSHAW CONTROLS COMPANY

Patents By Year of Grant:	243	13	17	22	21	24	11	23	14	9	6	3	6	2	5	419
Patents By Year of Application:	260	17	25	21	19	13	19	23	7	2	4	4	1	4	0	419

CARL ZEISS STIFTUNG

Patents By Year of Grant:	159	17	20	18	28	23	13	15	8	12	17	24	25	18	19	416
Patents By Year of Application:	183	21	23	23	22	19	15	12	23	18	20	19	14	4	0	416

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 18

---- Organizational Patenting (Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre															
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
<b>DAEWOO ELECTRONICS COMPANY, LTD.</b>																
Patents By Year of Grant:	1	0	1	0	0	1	1	7	6	37	79	135	102	40	5	415
Patents By Year of Application:	2	0	0	0	2	1	8	40	61	124	113	59	4	1	0	415
<b>NGK INSULATORS LTD.</b>																
Patents By Year of Grant:	61	19	33	30	26	25	22	16	16	9	19	25	39	31	44	415
Patents By Year of Application:	96	30	37	21	23	19	21	12	18	23	43	40	24	7	1	415
<b>HYUNDAI MOTOR CO., LTD.</b>																
Patents By Year of Grant:	0	0	0	0	3	1	4	13	16	42	56	79	81	42	75	412
Patents By Year of Application:	0	0	2	1	4	7	22	22	73	87	91	27	60	16	0	412
<b>B. F. GOODRICH CO.</b>																
Patents By Year of Grant:	193	27	26	7	17	20	10	16	15	19	7	15	10	11	18	411
Patents By Year of Application:	233	20	19	13	7	21	17	17	14	10	16	10	8	6	0	411
<b>KONICA CORPORATION</b>																
Patents By Year of Grant:	120	12	20	29	20	27	28	23	22	12	13	20	18	19	28	411
Patents By Year of Application:	143	26	27	22	34	23	20	21	14	19	20	25	12	5	0	411
<b>CORNING INCORPORATED</b>																
Patents By Year of Grant:	153	9	6	13	6	13	19	14	13	22	15	20	34	23	48	408
Patents By Year of Application:	167	5	15	6	20	17	20	20	23	13	27	27	39	9	0	408
<b>FUJI XEROX CO., LTD.</b>																
Patents By Year of Grant:	112	17	10	9	6	6	10	14	23	17	32	40	46	39	24	405
Patents By Year of Application:	136	11	5	5	10	14	33	26	28	50	44	22	17	4	0	405
<b>KENDALL COMPANY</b>																
Patents By Year of Grant:	277	16	19	18	23	13	8	11	12	2	3	3	0	0	0	405
Patents By Year of Application:	314	20	16	15	7	8	8	13	1	3	0	0	0	0	0	405
<b>RAYTHEON COMPANY</b>																
Patents By Year of Grant:	137	8	8	12	18	15	12	6	9	0	4	34	51	54	35	403
Patents By Year of Application:	166	9	14	17	14	11	5	6	7	30	57	36	22	9	0	403
<b>UNION CARBIDE CORPORATION</b>																
Patents By Year of Grant:	335	18	24	21	2	0	0	0	0	0	0	0	0	0	0	400
Patents By Year of Application:	362	22	16	0	0	0	0	0	0	0	0	0	0	0	0	400
<b>MASSACHUSETTS INSTITUTE OF TECHNOLOGY</b>																
Patents By Year of Grant:	91	14	15	25	15	24	17	22	29	18	17	35	32	25	17	396
Patents By Year of Application:	122	20	19	25	22	19	21	28	28	34	21	23	12	1	1	396

----- Technology Assessment and Forecast Report -----

**MECHANICAL CLASSES (12-31-2001)**

Page B - 19

----- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 20

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

**COCA-COLA COMPANY**

Patents By Year of Grant:	112	20	29	35	19	18	17	14	17	9	6	19	17	15	29	376
Patents By Year of Application:	166	26	20	17	20	9	14	20	9	18	18	16	18	5	0	376

**KLOCKNER-HUMBOLDT-DEUTZ AKTIENGESELLSCHAFT**

Patents By Year of Grant:	267	19	14	8	7	11	16	8	11	10	5	0	0	0	0	376
Patents By Year of Application:	294	12	7	11	10	14	10	12	3	3	0	0	0	0	0	376

**AMOCO CORPORATION**

Patents By Year of Grant:	205	22	30	19	20	13	19	10	14	9	5	6	3	0	0	375
Patents By Year of Application:	242	28	24	12	21	10	10	9	12	5	2	0	0	0	0	375

**FOCKE & CO.**

Patents By Year of Grant:	79	16	18	35	22	23	16	23	22	27	14	14	21	24	19	373
Patents By Year of Application:	115	24	19	27	23	19	18	26	22	17	21	25	16	1	0	373

**ITT INDUSTRIES, INC.**

Patents By Year of Grant:	335	5	5	0	0	1	0	4	4	3	0	4	5	2	3	371
Patents By Year of Application:	345	0	0	0	1	4	2	3	4	4	6	1	1	0	0	371

**ALLIS-CHALMERS CORPORATION**

Patents By Year of Grant:	369	0	0	0	0	0	0	0	0	0	0	0	0	0	0	369
Patents By Year of Application:	369	0	0	0	0	0	0	0	0	0	0	0	0	0	0	369

**ADVANCED CARDIOVASCULAR SYSTEMS, INC.**

Patents By Year of Grant:	19	15	5	15	15	10	13	19	22	28	20	27	36	52	72	368
Patents By Year of Application:	39	11	17	10	14	16	31	28	21	25	49	49	48	10	0	368

**C. R. BARD, INC.**

Patents By Year of Grant:	63	17	19	28	15	31	17	28	21	15	16	29	29	15	23	366
Patents By Year of Application:	100	22	19	25	27	18	26	22	20	27	27	17	15	1	0	366

**EXXON PRODUCTION RESEARCH COMPANY**

Patents By Year of Grant:	252	18	14	14	7	11	12	13	5	3	1	4	8	3	0	365
Patents By Year of Application:	278	15	9	10	11	12	8	6	2	2	4	7	1	0	0	365

**NIPPON STEEL CORP.**

Patents By Year of Grant:	173	17	17	12	12	24	16	14	15	3	9	12	16	14	11	365
Patents By Year of Application:	197	16	11	20	25	9	18	7	8	20	16	12	5	1	0	365

**GAS RESEARCH INSTITUTE**

Patents By Year of Grant:	28	8	25	29	24	17	32	27	32	23	33	30	32	16	8	364
Patents By Year of Application:	45	23	36	18	15	41	32	29	39	29	28	15	14	0	0	364

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 21

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

CARL FREUDENBERG

Patents By Year of Grant:	75	17	16	17	17	24	31	35	32	29	17	6	18	18	10	362
Patents By Year of Application:	102	15	21	18	23	35	38	37	20	12	18	11	11	1	0	362

AB VOLVO

Patents By Year of Grant:	135	11	14	7	19	16	12	11	15	12	18	22	22	29	18	361
Patents By Year of Application:	154	11	13	16	12	14	16	18	15	22	23	32	13	2	0	361

GENERAL SIGNAL CORPORATION

Patents By Year of Grant:	211	19	24	14	15	14	9	7	11	13	6	9	4	3	1	360
Patents By Year of Application:	240	19	16	17	8	9	10	11	10	9	6	5	0	0	0	360

UNISIA JCSC CORPORATION

Patents By Year of Grant:	0	0	0	0	0	0	1	16	39	49	62	44	46	52	51	360
Patents By Year of Application:	0	0	0	0	0	0	35	49	55	55	52	61	33	20	0	360

GILLETTE COMPANY

Patents By Year of Grant:	151	12	9	14	26	12	11	11	10	12	11	15	20	17	27	358
Patents By Year of Application:	170	8	9	30	11	14	14	9	15	15	23	22	12	5	1	358

KIMBERLY-CLARK WORLDWIDE, INC.

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	0	33	57	74	94	100	358
Patents By Year of Application:	0	0	0	0	0	0	6	16	43	65	92	58	65	11	2	358

OWENS-CORNING FIBERGLAS CORPORATION

Patents By Year of Grant:	225	8	10	4	3	2	6	1	1	7	13	19	22	21	13	355
Patents By Year of Application:	242	5	2	2	4	4	2	5	19	19	17	24	10	0	0	355

DANFOSS A/S

Patents By Year of Grant:	178	16	7	12	16	14	8	7	5	8	16	26	17	13	10	353
Patents By Year of Application:	194	9	16	14	16	4	8	5	20	30	12	14	8	3	0	353

INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE, TAIWAN

Patents By Year of Grant:	6	4	11	8	10	17	25	19	25	21	35	37	35	38	62	353
Patents By Year of Application:	14	14	3	19	17	22	27	22	35	37	38	36	52	17	0	353

BAYERISCHE MOTOREN WERKE AG

Patents By Year of Grant:	130	21	15	3	9	6	4	5	6	14	15	22	27	29	46	352
Patents By Year of Application:	160	9	6	6	6	3	7	14	11	27	30	31	33	9	0	352

INTERNATIONAL PAPER CO.

Patents By Year of Grant:	151	16	13	14	22	10	13	13	17	15	12	17	11	8	15	347
Patents By Year of Application:	174	12	17	18	11	10	18	18	17	11	17	6	9	6	3	347

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 22

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----																
	Pre 1988 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 TOTAL															
<b>R. J. REYNOLDS TOBACCO COMPANY</b>																
Patents By Year of Grant:	62	26	26	39	47	43	20	19	19	12	13	12	1	6	2	347
Patents By Year of Application:	131	29	38	35	29	25	16	13	13	11	3	4	0	0	0	347
<b>MURATA MANUFACTURING CO., LTD.</b>																
Patents By Year of Grant:	18	13	7	12	16	15	15	23	19	38	31	29	25	44	40	345
Patents By Year of Application:	34	9	13	16	21	21	21	37	36	32	34	35	34	2	0	345
<b>J. M. VOITH GMBH</b>																
Patents By Year of Grant:	112	13	27	20	21	32	23	34	27	22	6	3	3	1	0	344
Patents By Year of Application:	144	20	22	26	24	29	34	33	5	4	2	1	0	0	0	344
<b>WHITE CONSOLIDATED INDUSTRIES, INC.</b>																
Patents By Year of Grant:	85	14	17	19	16	11	19	23	17	23	17	37	19	14	11	342
Patents By Year of Application:	108	14	20	15	13	18	19	20	27	33	27	15	9	4	0	342
<b>DRAGERWERK AKTIENGESELLSCHAFT</b>																
Patents By Year of Grant:	147	15	28	14	20	16	10	22	8	12	12	22	12	2	1	341
Patents By Year of Application:	174	21	25	14	8	25	14	7	15	11	25	1	1	0	0	341
<b>DAIWA SEIKO INC</b>																
Patents By Year of Grant:	31	9	16	12	11	10	10	22	25	40	38	33	33	31	19	340
Patents By Year of Application:	48	12	15	12	9	16	30	47	38	29	46	17	20	1	0	340
<b>TECUMSEH PRODUCTS COMPANY</b>																
Patents By Year of Grant:	93	17	23	30	19	22	33	18	11	11	3	8	13	15	23	339
Patents By Year of Application:	112	21	36	18	30	30	13	10	7	12	12	11	18	9	0	339
<b>TELEDYNE INDUSTRIES, INC.</b>																
Patents By Year of Grant:	181	16	13	15	18	25	13	13	8	4	9	2	10	6	2	335
Patents By Year of Application:	207	16	15	20	17	16	8	5	6	8	7	9	1	0	0	335
<b>LINDE AKTIENGESELLSCHAFT</b>																
Patents By Year of Grant:	164	14	11	10	9	13	7	11	9	13	13	11	12	15	21	333
Patents By Year of Application:	183	11	9	13	9	7	18	8	15	11	13	12	16	8	0	333
<b>MOTOREN-UND TURBINEN-UNION MUNCHEN GMBH</b>																
Patents By Year of Grant:	133	24	30	22	20	20	12	11	11	8	10	8	6	9	9	333
Patents By Year of Application:	175	18	29	22	12	8	14	12	8	8	10	8	3	6	0	333
<b>NIFCO INC.</b>																
Patents By Year of Grant:	142	14	37	15	9	8	11	12	5	13	22	15	12	5	12	332
Patents By Year of Application:	172	26	16	6	7	13	15	5	21	17	14	6	7	7	0	332

## ---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 23

## ---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	-------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

## YAMAHA CORPORATION

Patents By Year of Grant:	0	5	28	17	10	9	21	18	18	29	24	29	49	46	29	332
Patents By Year of Application:	21	16	20	13	18	15	20	28	31	44	42	32	23	9	0	332

## ACF INDUSTRIES, INCORPORATED

Patents By Year of Grant:	296	3	6	3	7	3	3	6	2	1	0	0	0	0	0	330
Patents By Year of Application:	303	2	7	2	4	5	5	2	0	0	0	0	0	0	0	330

## JIDOSHA KIKI CO. LTD.

Patents By Year of Grant:	96	19	15	19	24	27	20	18	9	14	9	16	15	20	9	330
Patents By Year of Application:	124	17	23	16	31	11	19	11	16	13	22	12	15	0	0	330

## CHEVRON RESEARCH &amp; TECHNOLOGY CO.

Patents By Year of Grant:	199	22	22	18	19	19	17	10	1	2	0	0	0	0	0	329
Patents By Year of Application:	239	13	21	23	19	10	2	2	0	0	0	0	0	0	0	329

## ISHIKAWAJIMA-HARIMA HEAVY INDUSTRIES CO., LTD.

Patents By Year of Grant:	113	19	10	16	18	6	15	12	15	8	10	16	23	30	18	329
Patents By Year of Application:	134	15	13	18	10	11	16	13	12	17	24	27	15	4	0	329

## ISUZU MOTORS LIMITED

Patents By Year of Grant:	40	26	36	26	39	24	3	8	6	8	12	19	16	30	36	329
Patents By Year of Application:	89	27	32	32	12	6	7	4	12	21	22	19	30	16	0	329

## KOYO SEIKO COMPANY, LTD.

Patents By Year of Grant:	38	8	17	28	23	20	25	12	14	14	12	23	27	32	36	329
Patents By Year of Application:	50	20	32	18	21	25	14	17	12	17	31	35	30	7	0	329

## MORTON INTERNATIONAL, INC.

Patents By Year of Grant:	0	0	0	0	4	1	8	23	81	86	75	40	6	0	0	324
Patents By Year of Application:	0	0	1	3	5	16	38	76	97	72	16	0	0	0	0	324

## PARKER-HANNIFIN CORPORATION

Patents By Year of Grant:	165	13	17	5	15	12	5	5	12	9	8	8	13	20	17	324
Patents By Year of Application:	188	10	7	17	7	8	8	10	10	9	12	16	12	9	1	324

## MARVIN GLASS &amp; ASSOCIATES

Patents By Year of Grant:	296	8	10	9	0	0	0	0	0	0	0	0	0	0	0	323
Patents By Year of Application:	307	7	8	1	0	0	0	0	0	0	0	0	0	0	0	323

## FERAG AG

Patents By Year of Grant:	84	16	13	17	23	22	5	17	19	15	24	23	9	8	24	319
Patents By Year of Application:	110	19	24	11	12	17	20	13	35	19	11	8	16	4	0	319

----- Technology Assessment and Forecast Report -----

**MECHANICAL CLASSES (12-31-2001)**

Page B - 24

----- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre																			
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL				
<b>MILLIKEN RESEARCH CORPORATION</b>																				
Patents By Year of Grant:	163	13	17	15	15	16	11	14	16	11	9	15	4	0	0	0	319			
Patents By Year of Application:	185	16	11	18	11	17	19	10	11	12	8	1	0	0	0	0	319			
<b>TERUMO KABUSHIKI KAISHA (TERUMO CORPORATION)</b>																				
Patents By Year of Grant:	89	14	12	11	33	41	22	16	18	18	8	8	10	9	10	319				
Patents By Year of Application:	109	13	34	43	18	19	19	21	9	7	12	10	5	0	0	0	319			
<b>EXXON RESEARCH + ENGINEERING CO.</b>																				
Patents By Year of Grant:	263	5	4	1	9	2	4	5	5	2	3	6	4	2	2	2	317			
Patents By Year of Application:	273	0	9	3	4	1	6	4	2	7	3	3	2	0	0	0	317			
<b>KAWASAKI STEEL CORPORATION</b>																				
Patents By Year of Grant:	108	18	16	17	9	7	16	18	5	14	22	13	16	10	26	315				
Patents By Year of Application:	139	11	13	8	12	19	11	20	10	23	10	12	18	9	0	0	315			
<b>RIETER MACHINE WORKS LTD.</b>																				
Patents By Year of Grant:	178	12	12	26	37	16	7	7	4	4	3	2	2	1	0	0	311			
Patents By Year of Application:	198	12	44	22	13	6	4	5	3	3	1	0	0	0	0	0	311			
<b>FRANZ PLASSER BAHNBAUMASCHINEN-INDUSTRIE GMBH</b>																				
Patents By Year of Grant:	140	8	15	14	13	20	13	12	14	15	15	7	11	8	5	310				
Patents By Year of Application:	156	11	14	15	19	12	9	23	12	14	9	9	6	1	0	0	310			
<b>JANOME SEWING MACHINE CO. LTD.</b>																				
Patents By Year of Grant:	224	14	10	20	19	2	1	1	0	1	0	3	3	9	3	310				
Patents By Year of Application:	241	22	16	10	1	1	0	1	0	2	3	4	7	2	0	0	310			
<b>KIORITZ CORPORATION</b>																				
Patents By Year of Grant:	71	19	25	28	10	14	13	9	10	8	11	14	34	29	14	309				
Patents By Year of Application:	101	23	20	10	16	11	10	14	8	17	30	34	12	3	0	0	309			
<b>DAIMLERCHRYSLER CORPORATION</b>																				
Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	0	0	0	21	126	161	308				
Patents By Year of Application:	0	0	0	0	0	0	0	0	2	6	12	40	203	45	0	0	308			
<b>THOMAS + BETTS CORPORATION</b>																				
Patents By Year of Grant:	146	20	7	12	12	13	7	9	10	14	20	12	19	6	1	308				
Patents By Year of Application:	171	5	10	14	13	11	15	14	21	16	13	3	2	0	0	0	308			
<b>GARRETT CORPORATION</b>																				
Patents By Year of Grant:	298	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	306			
Patents By Year of Application:	306	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	306		

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 25

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

PPG INDUSTRIES INC.

Patents By Year of Grant:	234	10	5	3	8	1	6	4	2	8	7	14	4	0	0	306
Patents By Year of Application:	249	6	4	4	3	1	7	9	10	8	5	0	0	0	0	306

RAYCHEM CORPORATION

Patents By Year of Grant:	142	16	26	17	15	14	9	11	12	15	9	7	12	1	0	306
Patents By Year of Application:	171	26	13	15	10	17	13	12	11	6	11	1	0	0	0	306

BOSTON SCIENTIFIC CORPORATION

Patents By Year of Grant:	0	0	1	8	5	6	12	15	32	26	25	33	53	47	42	305
Patents By Year of Application:	1	5	7	8	9	15	25	36	33	36	64	35	23	8	0	305

GEWERKSCHAFT EISENHUTTE WESTFALIA

Patents By Year of Grant:	262	15	7	6	4	9	2	0	0	0	0	0	0	0	0	305
Patents By Year of Application:	282	2	7	6	8	0	0	0	0	0	0	0	0	0	0	305

KENNAMETAL INC.

Patents By Year of Grant:	80	8	14	15	16	20	15	21	17	7	18	26	19	19	8	303
Patents By Year of Application:	95	15	12	19	19	24	13	14	23	19	22	20	7	0	1	303

POLAROID CORPORATION

Patents By Year of Grant:	200	4	12	17	6	6	2	5	7	8	13	9	7	5	0	301
Patents By Year of Application:	217	10	9	5	3	8	5	11	10	13	6	2	2	0	0	301

TAKATA CORPORATION

Patents By Year of Grant:	1	0	2	4	8	33	33	66	39	23	5	8	11	25	42	300
Patents By Year of Application:	1	2	4	23	37	54	53	25	17	5	7	25	41	6	0	300

AGFA-GEVAERT, AG

Patents By Year of Grant:	216	14	14	11	7	7	7	5	5	1	3	4	4	0	1	299
Patents By Year of Application:	241	11	6	9	5	7	6	3	2	5	2	1	0	1	0	299

BBC BROWN, BOVERI & COMPANY, LIMITED

Patents By Year of Grant:	271	22	6	0	0	0	0	0	0	0	0	0	0	0	0	299
Patents By Year of Application:	298	1	0	0	0	0	0	0	0	0	0	0	0	0	0	299

TRUTZSCHLER GMBH & CO. KG

Patents By Year of Grant:	93	16	14	12	10	19	15	13	12	17	20	8	14	14	22	299
Patents By Year of Application:	121	8	12	19	17	12	14	10	24	13	10	12	19	7	1	299

BAYER AKTIENGESELLSCHAFT

Patents By Year of Grant:	150	12	14	16	14	6	16	6	5	4	11	10	12	13	9	298
Patents By Year of Application:	170	17	14	7	11	13	6	4	11	12	12	12	7	2	0	298

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 26

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----																
	Pre															
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
<b>TOYODA KOKI KABUSHIKI KAISHA</b>																
Patents By Year of Grant:	154	11	13	16	9	8	12	12	7	11	6	13	8	11	7	298
Patents By Year of Application:	174	12	13	10	9	11	11	13	7	9	13	10	6	0	0	298
<b>KABUSHIKI KAISHA DAIKIN SEISAKUSHO</b>																
Patents By Year of Grant:	96	23	35	34	29	19	11	8	12	26	3	1	0	0	0	297
Patents By Year of Application:	131	46	24	24	16	10	16	17	10	3	0	0	0	0	0	297
<b>GRUMMAN AEROSPACE CORPORATION</b>																
Patents By Year of Grant:	118	16	18	32	31	20	22	19	8	10	2	0	0	0	0	296
Patents By Year of Application:	146	20	33	25	22	22	14	10	4	0	0	0	0	0	0	296
<b>PACESSETTER, INC.</b>																
Patents By Year of Grant:	0	0	0	0	0	0	0	0	34	35	43	75	37	30	42	296
Patents By Year of Application:	0	0	0	1	0	2	26	28	55	59	52	34	38	1	0	296
<b>PRAXAIR TECHNOLOGY, INC.</b>																
Patents By Year of Grant:	0	0	0	0	0	7	38	26	36	20	28	37	35	24	45	296
Patents By Year of Application:	0	0	0	0	21	38	30	26	26	26	41	39	20	27	2	296
<b>CARDIAC PACEMAKERS, INC.</b>																
Patents By Year of Grant:	21	5	6	4	15	14	10	18	12	9	11	18	25	62	63	293
Patents By Year of Application:	32	1	8	20	14	17	9	10	16	9	30	59	55	13	0	293
<b>MOORE BUSINESS FORMS INC.</b>																
Patents By Year of Grant:	53	6	18	16	14	22	19	51	23	17	18	20	7	6	3	293
Patents By Year of Application:	69	16	9	21	16	41	49	19	29	17	6	1	0	0	0	293
<b>NIPPON SEIKO KABUSHIKI KAISHA</b>																
Patents By Year of Grant:	79	23	45	57	52	26	9	0	1	1	0	0	0	0	0	293
Patents By Year of Application:	123	48	49	39	29	3	1	1	0	0	0	0	0	0	0	293
<b>TETRA LAVAL HOLDINGS &amp; FINANCE S.A.</b>																
Patents By Year of Grant:	0	0	0	0	0	0	0	11	18	34	16	70	52	54	38	293
Patents By Year of Application:	0	0	0	0	0	10	18	35	21	41	65	60	29	13	1	293
<b>3M INNOVATIVE PROPERTIES COMPANY</b>																
Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	0	0	0	57	120	115	292
Patents By Year of Application:	0	0	0	0	0	0	0	1	10	16	71	99	69	25	1	292
<b>ALZA CORPORATION</b>																
Patents By Year of Grant:	92	16	9	18	10	17	13	15	21	13	8	9	15	13	23	292
Patents By Year of Application:	116	15	12	16	15	20	18	16	17	6	19	15	7	0	0	292

## ---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 27

## ---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	-------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

## W. R. GRACE &amp; CO.-CONN.

Patents By Year of Grant:	103	7	25	18	31	20	19	10	13	15	13	10	5	1	2	292
Patents By Year of Application:	125	26	27	20	15	18	13	11	21	6	8	0	1	1	0	292

## THOMSON-CSF

Patents By Year of Grant:	143	14	12	13	22	16	14	11	10	8	6	10	4	4	3	290
Patents By Year of Application:	169	12	19	16	16	16	9	6	9	4	10	2	2	0	0	290

## DELPHI TECHNOLOGIES, INC.

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	0	0	0	64	224	288
Patents By Year of Application:	0	0	0	0	0	0	0	0	0	0	17	192	75	4	288

## BORG-WARNER AUTOMOTIVE, INC.

Patents By Year of Grant:	16	11	14	6	20	6	12	24	31	21	41	36	38	11	0	287
Patents By Year of Application:	41	3	9	15	7	24	25	26	38	42	38	17	2	0	0	287

## MATSUSHITA ELECTRIC WORKS, LTD.

Patents By Year of Grant:	104	13	11	11	10	13	15	10	8	18	3	15	20	21	15	287
Patents By Year of Application:	123	10	10	11	14	15	13	12	9	18	20	19	10	2	1	287

## MITSUBISHI HEAVY INDUSTRIES CO., LTD.

Patents By Year of Grant:	0	0	0	0	0	1	0	1	0	0	0	8	51	115	110	286
Patents By Year of Application:	0	0	0	1	0	0	1	0	0	0	51	112	92	27	2	286

## CONTINENTAL GROUP, INC.

Patents By Year of Grant:	257	6	10	7	5	0	0	0	0	0	0	0	0	0	0	285
Patents By Year of Application:	266	14	3	2	0	0	0	0	0	0	0	0	0	0	0	285

## TORRINGTON COMPANY

Patents By Year of Grant:	58	8	17	17	12	16	22	16	26	27	12	14	16	11	13	285
Patents By Year of Application:	69	16	14	15	22	17	23	30	19	15	16	18	10	1	0	285

## ZEXEL CORPORATION

Patents By Year of Grant:	0	0	0	0	11	30	28	13	14	30	40	26	55	25	13	285
Patents By Year of Application:	0	0	0	20	32	18	19	23	48	31	44	36	9	5	0	285

## COLGATE-PALMOLIVE COMPANY

Patents By Year of Grant:	137	7	12	18	15	10	6	7	9	7	1	14	19	10	12	284
Patents By Year of Application:	156	17	16	11	4	7	7	6	9	18	9	12	8	4	0	284

## IMPERIAL CHEMICAL INDUSTRIES PLC

Patents By Year of Grant:	172	10	17	13	18	6	15	6	6	6	1	8	3	1	2	284
Patents By Year of Application:	192	14	16	11	13	12	4	7	2	9	1	1	2	0	0	284

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 28

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

REGIE NATIONALE DES USINES RENAULT

Patents By Year of Grant:	240	6	6	7	2	1	2	2	6	1	1	0	0	2	7	283
Patents By Year of Application:	249	6	6	0	4	0	4	4	1	0	0	2	3	4	0	283

BRITISH AEROSPACE

Patents By Year of Grant:	73	19	31	14	30	27	19	11	13	7	10	8	10	9	1	282
Patents By Year of Application:	121	26	28	20	17	14	13	8	7	10	8	7	3	0	0	282

LUK LAMELLEN UND KUPPLUNGSBAU GMBH

Patents By Year of Grant:	93	17	8	8	13	15	13	11	12	6	16	11	15	15	29	282
Patents By Year of Application:	120	11	8	12	16	13	11	14	15	7	20	10	13	11	1	282

TSUBAKIMOTO CHAIN CO.

Patents By Year of Grant:	24	10	15	13	19	19	27	20	14	9	13	16	25	28	28	280
Patents By Year of Application:	38	18	11	21	19	25	14	18	16	18	28	22	22	10	0	280

RAYMOND LEE ORGANIZATION

Patents By Year of Grant:	277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	277
Patents By Year of Application:	277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	277

HAUNI-WERKE KORBER + CO. KG

Patents By Year of Grant:	274	2	0	0	0	0	0	0	0	0	0	0	0	0	0	276
Patents By Year of Application:	276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	276

BERG TECHNOLOGY, INC.

Patents By Year of Grant:	0	0	0	0	0	0	0	1	20	21	26	49	45	56	56	274
Patents By Year of Application:	0	0	0	0	0	0	16	26	27	56	55	47	39	8	0	274

NORTHROP GRUMMAN CORPORATION

Patents By Year of Grant:	0	0	0	0	0	0	0	1	23	26	34	56	55	48	31	274
Patents By Year of Application:	8	1	1	0	1	1	16	24	45	40	58	42	33	3	1	274

AKTIEBOLAGET ELECTROLUX

Patents By Year of Grant:	81	9	11	19	18	15	8	12	7	13	15	20	18	15	12	273
Patents By Year of Application:	96	13	14	21	11	11	11	13	12	18	23	15	12	3	0	273

PERKIN-ELMER CORPORATION

Patents By Year of Grant:	174	21	19	18	8	5	7	4	5	3	3	3	2	0	0	272
Patents By Year of Application:	207	18	12	4	9	3	5	5	7	1	0	1	0	0	0	272

UNITED STATES OF AMERICA, DEPARTMENT OF AGRICULTURE

Patents By Year of Grant:	146	8	8	11	10	16	8	9	11	8	4	11	10	6	6	272
Patents By Year of Application:	156	7	13	16	13	8	13	8	5	11	9	8	4	1	0	272

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 29

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

BAKER INTERNATIONAL CORP.

Patents By Year of Grant:	241	18	7	3	1	0	0	0	0	0	0	0	0	0	0	270
Patents By Year of Application:	264	5	1	0	0	0	0	0	0	0	0	0	0	0	0	270

AMERICAN HOSPITAL SUPPLY CORPORATION

Patents By Year of Grant:	259	6	3	0	0	0	0	0	0	0	0	0	0	0	0	268
Patents By Year of Application:	267	1	0	0	0	0	0	0	0	0	0	0	0	0	0	268

SIEMENS AUTOMOTIVE CORPORATION

Patents By Year of Grant:	0	0	0	3	19	34	28	21	20	25	13	26	15	27	37	268
Patents By Year of Application:	0	0	6	28	26	28	21	28	24	21	18	22	38	8	0	268

ETHICON ENDO-SURGERY

Patents By Year of Grant:	0	0	0	0	0	0	0	3	17	27	42	49	69	31	29	267
Patents By Year of Application:	0	0	0	0	0	0	8	25	42	51	70	31	34	6	0	267

VOLKSWAGENWERK AKTIENGESELLSCHAFT

Patents By Year of Grant:	263	2	0	1	0	0	0	0	0	0	0	0	0	0	0	266
Patents By Year of Application:	265	1	0	0	0	0	0	0	0	0	0	0	0	0	0	266

WINDMOELLER & HOELSCHER GMBH

Patents By Year of Grant:	118	10	10	4	9	21	9	17	6	10	9	10	17	8	7	265
Patents By Year of Application:	137	5	8	13	17	15	8	8	9	19	8	10	7	1	0	265

TOSHIBA MACHINE CO., LTD.

Patents By Year of Grant:	74	13	12	13	17	15	15	10	5	7	18	16	18	11	20	264
Patents By Year of Application:	94	11	20	15	11	14	9	8	15	17	22	15	9	4	0	264

AISIN AW CO., LTD.

Patents By Year of Grant:	0	0	5	14	22	27	28	11	9	17	17	50	32	17	14	263
Patents By Year of Application:	0	14	32	21	25	16	6	10	19	62	26	13	16	3	0	263

PRINCE CORPORATION

Patents By Year of Grant:	53	14	9	9	23	14	25	20	17	19	9	16	18	14	3	263
Patents By Year of Application:	73	10	10	22	18	31	18	16	12	16	19	18	0	0	0	263

HUGHES TOOL COMPANY

Patents By Year of Grant:	216	29	5	6	2	3	0	1	0	0	0	0	0	0	0	262
Patents By Year of Application:	247	6	3	2	3	1	0	0	0	0	0	0	0	0	0	262

USX CORPORATION

Patents By Year of Grant:	232	2	4	1	1	2	3	0	1	5	3	2	5	1	0	262
Patents By Year of Application:	234	5	0	1	3	2	0	5	2	3	2	3	2	0	0	262

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 30

---- Organizational Patenting (Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	-------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

NIPPON THOMPSON CO., LTD.

Patents By Year of Grant:	39	9	14	15	10	15	31	37	24	16	11	10	8	13	9	261
Patents By Year of Application:	50	17	11	12	25	32	34	22	12	12	12	11	10	1	0	261

TOKYO ELECTRIC CO., LTD.

Patents By Year of Grant:	89	16	21	21	31	38	26	12	5	0	0	1	0	0	0	260
Patents By Year of Application:	117	28	19	33	34	17	11	0	0	1	0	0	0	0	0	260

RYOBI, LTD.

Patents By Year of Grant:	84	22	23	20	14	8	15	18	12	4	12	6	9	6	6	259
Patents By Year of Application:	115	24	16	10	11	16	23	5	6	10	10	7	5	1	0	259

AGENCY OF INDUSTRIAL SCIENCE & TECHNOLOGY

Patents By Year of Grant:	98	13	18	13	20	7	6	6	15	12	9	11	11	9	9	257
Patents By Year of Application:	123	10	22	10	9	4	11	17	12	13	13	4	4	5	0	257

BELL + HOWELL COMPANY

Patents By Year of Grant:	207	8	6	9	3	12	7	0	1	3	0	0	0	0	1	257
Patents By Year of Application:	221	7	4	4	13	3	0	4	0	0	0	0	1	0	0	257

CLARK EQUIPMENT COMPANY, INC.

Patents By Year of Grant:	170	3	8	9	9	5	3	0	4	7	4	3	8	10	14	257
Patents By Year of Application:	179	4	10	7	6	1	3	6	6	5	6	10	11	3	0	257

RISO KAGAKU CORPORATION

Patents By Year of Grant:	9	0	0	4	7	7	5	12	21	33	37	25	29	29	37	255
Patents By Year of Application:	10	1	3	7	6	9	18	34	42	28	21	34	23	19	0	255

DAINIPPON SCREEN MFG. CO., LTD.

Patents By Year of Grant:	54	11	14	20	11	12	14	12	10	11	22	19	19	18	7	254
Patents By Year of Application:	74	13	22	11	13	15	10	15	18	27	17	15	4	0	0	254

MAYTAG CORPORATION

Patents By Year of Grant:	50	3	5	3	8	10	15	14	8	10	13	21	39	25	29	253
Patents By Year of Application:	53	6	5	8	14	15	13	11	13	18	32	32	25	8	0	253

OKI ELECTRIC INDUSTRY CO., LTD.

Patents By Year of Grant:	69	17	16	14	20	20	16	10	11	3	8	13	9	10	17	253
Patents By Year of Application:	98	11	23	16	21	10	12	9	12	4	10	11	12	3	1	253

YOKOHAMA RUBBER CO., LTD.

Patents By Year of Grant:	34	13	16	10	18	22	25	26	11	5	11	14	14	18	16	253
Patents By Year of Application:	60	12	13	20	30	19	18	9	6	19	15	16	14	2	0	253

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 31

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre															
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL

**CONTAINER CORPORATION OF AMERICA**

Patents By Year of Grant:	215	6	10	9	5	4	2	1	0	0	0	0	0	0	0	252
Patents By Year of Application:	221	10	8	3	6	3	1	0	0	0	0	0	0	0	0	252

**SMITHKLINE BECKMAN CORPORATION**

Patents By Year of Grant:	167	10	13	11	4	8	3	6	10	6	2	4	8	0	0	252
Patents By Year of Application:	188	7	10	4	7	5	7	11	1	3	8	1	0	0	0	252

**VOLKSWAGEN AKTIENGESELLSCHAFT**

Patents By Year of Grant:	7	12	17	10	8	18	18	19	12	17	7	13	31	29	32	250
Patents By Year of Application:	29	10	9	10	20	21	22	14	8	11	28	30	27	10	1	250

**VDO ADOLF SCHINDLING AG**

Patents By Year of Grant:	105	26	18	20	18	18	7	1	4	7	1	15	6	2	1	249
Patents By Year of Application:	144	16	15	14	17	6	3	7	4	16	4	3	0	0	0	249

**KOENIG + BAUER AKTIENGESELLSCHAFT**

Patents By Year of Grant:	49	11	9	9	11	10	23	29	15	22	3	0	4	15	38	248
Patents By Year of Application:	65	11	6	11	7	33	24	17	17	1	1	7	34	14	0	248

**CITIZEN WATCH CO., LTD.**

Patents By Year of Grant:	89	10	14	8	14	10	15	10	8	8	5	13	10	15	18	247
Patents By Year of Application:	106	10	12	14	15	7	12	11	6	9	18	10	13	4	0	247

**BRAUN A.G.**

Patents By Year of Grant:	57	8	7	13	6	6	20	14	14	21	23	21	20	11	5	246
Patents By Year of Application:	71	9	10	3	11	25	11	21	29	23	22	9	2	0	0	246

**NTN CORPORATION**

Patents By Year of Grant:	0	0	0	1	10	7	13	14	10	13	35	37	31	40	35	246
Patents By Year of Application:	0	0	1	12	8	18	13	15	29	42	35	37	28	8	0	246

**AMERICAN CYANAMID COMPANY**

Patents By Year of Grant:	97	12	8	9	8	13	22	22	20	6	5	9	6	3	5	245
Patents By Year of Application:	115	14	5	15	20	20	25	7	9	4	3	1	5	2	0	245

**LEXMARK INTERNATIONAL, INC.**

Patents By Year of Grant:	0	0	0	0	3	3	2	6	3	11	10	20	47	67	73	245
Patents By Year of Application:	0	0	2	3	1	8	9	8	17	24	59	41	49	24	0	245

**KABUSHIKI KAISHA TOPCON**

Patents By Year of Grant:	0	0	0	5	16	12	14	15	16	13	20	27	40	41	25	244
Patents By Year of Application:	0	8	10	12	14	14	19	18	22	17	39	36	25	10	0	244

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 32

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

RIVERWOOD INTERNATIONAL CORPORATION

Patents By Year of Grant:	0	0	0	0	2	5	7	30	26	42	47	35	24	14	12	244
Patents By Year of Application:	0	0	0	3	5	9	35	43	52	32	34	11	16	4	0	244

ZINSER TEXTILMASCHINEN GMBH

Patents By Year of Grant:	72	23	22	19	11	18	2	10	3	10	7	4	14	17	12	244
Patents By Year of Application:	112	12	19	16	9	6	5	7	8	3	10	20	11	5	1	244

AMSTED INDUSTRIES, INCORPORATED

Patents By Year of Grant:	102	9	12	9	10	14	9	8	7	9	1	14	12	7	20	243
Patents By Year of Application:	115	9	14	10	15	4	8	11	4	8	17	13	12	3	0	243

ITT MANUFACTURING ENTERPRISES, INC.

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	0	15	63	103	62	243	
Patents By Year of Application:	0	0	0	0	0	0	1	1	1	7	82	90	44	17	0	243

MITA INDUSTRIAL COMPANY LTD.

Patents By Year of Grant:	34	4	12	8	26	35	32	21	22	8	7	14	14	5	0	242
Patents By Year of Application:	44	13	24	27	28	28	27	11	14	8	10	8	0	0	0	242

AEROQUIP CORPORATION, LINAIR DIVISION

Patents By Year of Grant:	87	8	7	13	5	12	16	11	10	17	13	14	10	14	4	241
Patents By Year of Application:	96	11	11	10	14	10	6	19	20	16	7	15	6	0	0	241

HOOVER UNIVERSAL, INC.

Patents By Year of Grant:	75	6	16	18	17	22	10	23	24	14	7	4	4	1	0	241
Patents By Year of Application:	84	15	18	19	23	21	21	20	11	1	7	1	0	0	0	241

EMHART INC.

Patents By Year of Grant:	0	0	0	0	11	31	18	19	15	29	21	17	27	28	24	240
Patents By Year of Application:	1	0	5	22	16	27	19	24	22	17	27	31	20	9	0	240

TDK CORPORATION

Patents By Year of Grant:	36	15	16	12	9	12	9	18	11	14	15	9	10	20	33	239
Patents By Year of Application:	61	13	16	7	8	18	15	11	20	8	8	25	19	10	0	239

BASF AKTIENGESELLSCHAFT

Patents By Year of Grant:	140	15	7	9	14	8	5	2	1	1	2	2	10	7	13	236
Patents By Year of Application:	159	11	10	9	8	2	3	0	3	4	6	12	7	2	0	236

FOSTER WHEELER ENERGY INTERNATIONAL, INC.

Patents By Year of Grant:	134	5	9	10	12	8	12	17	9	8	4	5	2	0	0	235
Patents By Year of Application:	146	5	8	12	13	17	8	11	7	6	1	1	0	0	0	235

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 33

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

TOKAI RUBBER INDUSTRIES, LTD.

Patents By Year of Grant:	11	9	16	14	21	17	19	19	6	4	13	10	17	22	37	235
Patents By Year of Application:	22	21	16	25	14	23	11	5	7	19	19	16	21	14	2	235

TORO COMPANY

Patents By Year of Grant:	94	10	7	9	8	11	11	9	6	10	10	14	11	19	6	235
Patents By Year of Application:	110	5	7	14	9	10	8	10	14	13	12	17	4	2	0	235

BOC GROUP, INC.

Patents By Year of Grant:	26	17	14	17	7	9	13	17	20	19	13	20	17	12	13	234
Patents By Year of Application:	51	10	14	8	15	14	19	21	14	18	23	10	11	5	1	234

IKEDA BUSSAN CO., LTD.

Patents By Year of Grant:	17	17	24	26	28	24	17	19	6	9	7	12	9	8	11	234
Patents By Year of Application:	47	22	34	21	25	15	13	10	4	13	8	9	11	2	0	234

INVENTIO AG

Patents By Year of Grant:	39	6	8	12	11	11	12	14	13	10	16	13	24	22	23	234
Patents By Year of Application:	45	11	17	7	13	15	14	11	19	20	15	23	16	8	0	234

STEELCASE INC.

Patents By Year of Grant:	47	4	4	5	6	8	19	19	15	15	17	34	29	6	5	233
Patents By Year of Application:	55	4	10	2	18	20	21	18	19	27	23	11	5	0	0	233

VOEST-ALPINE AKTIENGESELLSCHAFT

Patents By Year of Grant:	196	25	11	1	0	0	0	0	0	0	0	0	0	0	0	233
Patents By Year of Application:	228	5	0	0	0	0	0	0	0	0	0	0	0	0	0	233

KOMATSU LTD.

Patents By Year of Grant:	0	1	1	0	0	0	2	3	2	1	20	56	52	37	57	232
Patents By Year of Application:	2	0	0	0	0	3	4	1	7	54	50	51	47	12	1	232

SUZUKI MOTOR CORPORATION

Patents By Year of Grant:	0	0	0	0	2	13	14	15	16	13	4	22	43	44	46	232
Patents By Year of Application:	0	0	1	3	17	12	20	14	10	16	34	54	40	11	0	232

FUJI ELECTRIC CO., LTD.

Patents By Year of Grant:	74	11	5	7	13	5	7	10	13	21	17	13	18	10	7	231
Patents By Year of Application:	90	6	8	10	5	10	14	18	21	20	12	12	3	2	0	231

LOCKHEED CORPORATION

Patents By Year of Grant:	150	15	17	5	4	1	6	9	7	13	2	2	0	0	0	231
Patents By Year of Application:	179	5	6	3	3	8	5	15	7	0	0	0	0	0	0	231

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 34

---- Organizational Patenting (Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre															
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL

**ELECTRIC POWER RESEARCH INSTITUTE, INC.**

Patents By Year of Grant:	118	6	9	10	15	11	11	5	11	5	8	8	3	6	4	230
Patents By Year of Application:	132	5	13	16	8	11	9	7	9	3	7	5	5	0	0	230

**TELEFLEX INCORPORATED**

Patents By Year of Grant:	45	7	8	8	11	18	14	5	12	15	22	10	12	16	27	230
Patents By Year of Application:	54	11	6	13	20	10	13	4	23	19	12	11	27	6	1	230

**TOMY COMPANY, LTD.**

Patents By Year of Grant:	153	6	16	6	9	9	1	6	4	3	1	8	0	3	5	230
Patents By Year of Application:	162	13	11	8	6	5	4	2	3	7	1	4	2	2	0	230

**UNION OIL COMPANY OF CALIFORNIA**

Patents By Year of Grant:	116	9	9	5	13	19	16	14	8	3	3	4	2	3	6	230
Patents By Year of Application:	130	7	12	13	16	19	10	6	5	2	1	4	3	1	1	230

**DAYCO PRODUCTS, INC.**

Patents By Year of Grant:	22	14	15	22	24	16	13	22	22	21	5	7	8	11	7	229
Patents By Year of Application:	39	19	18	28	12	21	17	22	19	5	12	4	11	2	0	229

**DAYCO CORPORATION**

Patents By Year of Grant:	228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	228
Patents By Year of Application:	228	0	0	0	0	0	0	0	0	0	0	0	0	0	0	228

**KELSEY-HAYES CO.**

Patents By Year of Grant:	61	4	8	4	4	2	2	6	15	34	13	10	18	21	26	228
Patents By Year of Application:	69	5	7	1	4	2	10	27	29	13	21	13	23	4	0	228

**STANLEY WORKS**

Patents By Year of Grant:	89	8	9	4	12	12	7	6	8	11	10	12	14	9	17	228
Patents By Year of Application:	103	3	7	10	13	6	8	13	5	17	10	12	14	7	0	228

**LG ELECTRONICS INC.**

Patents By Year of Grant:	0	0	0	0	0	0	0	0	1	4	40	54	53	33	42	227
Patents By Year of Application:	0	0	0	0	0	0	0	1	42	63	48	28	36	8	1	227

**MARATHON OIL COMPANY**

Patents By Year of Grant:	91	16	14	7	20	12	6	15	13	6	7	9	3	4	3	226
Patents By Year of Application:	111	13	11	18	9	13	12	11	12	4	5	5	1	1	0	226

**HITACHI CONSTRUCTION MACHINERY CO., LTD.**

Patents By Year of Grant:	39	8	8	12	18	21	14	13	11	13	7	9	17	15	20	225
Patents By Year of Application:	49	16	21	17	15	12	10	16	5	10	14	26	12	1	1	225

## ---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 35

## ---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre 1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	-------------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

## AKEBONO BRAKE INDUSTRY CO., LTD.

Patents By Year of Grant:	51	27	14	20	19	11	11	15	4	2	2	6	14	8	20	224
Patents By Year of Application:	83	16	21	18	9	19	4	4	1	8	13	14	9	4	1	224

## FANUC LTD.

Patents By Year of Grant:	39	18	20	17	11	16	13	18	8	18	13	8	8	7	10	224
Patents By Year of Application:	67	20	14	14	11	21	11	15	19	5	12	8	4	3	0	224

## DIEHL GMBH &amp; CO.

Patents By Year of Grant:	94	16	27	22	21	11	8	4	3	3	11	3	0	0	0	223
Patents By Year of Application:	122	26	23	12	10	8	4	2	9	4	3	0	0	0	0	223

## BREED AUTOMOTIVE TECHNOLOGY, INC.

Patents By Year of Grant:	0	0	3	0	3	1	3	2	2	9	5	16	52	57	68	221
Patents By Year of Application:	2	1	3	0	3	1	2	7	8	14	43	55	56	24	2	221

## HIROSE ELECTRIC CO., LTD.

Patents By Year of Grant:	18	14	12	12	12	34	18	4	5	8	9	13	24	12	26	221
Patents By Year of Application:	37	6	14	11	41	15	1	8	14	10	22	14	16	10	2	221

## FORD NEW HOLLAND, INC.

Patents By Year of Grant:	0	14	33	43	35	40	23	27	4	1	0	0	0	0	0	220
Patents By Year of Application:	29	24	46	33	37	33	15	3	0	0	0	0	0	0	0	220

## LOCKHEED MARTIN CORPORATION

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	7	15	45	33	64	56	220
Patents By Year of Application:	3	0	0	0	0	0	2	10	19	40	32	55	42	16	1	220

## HITACHI KOKI COMPANY, LIMITED

Patents By Year of Grant:	40	5	7	7	9	19	16	7	8	7	20	26	17	14	17	219
Patents By Year of Application:	48	6	13	11	17	9	11	13	21	26	10	14	14	6	0	219

## TMC CORPORATION

Patents By Year of Grant:	162	9	10	11	17	10	0	0	0	0	0	0	0	0	0	219
Patents By Year of Application:	181	10	14	12	2	0	0	0	0	0	0	0	0	0	0	219

## MORTON THIOKOL, INC.

Patents By Year of Grant:	94	18	17	8	12	5	5	15	15	11	12	6	0	0	0	218
Patents By Year of Application:	126	12	9	9	7	16	12	9	10	8	0	0	0	0	0	218

## ZIMMER, INC.

Patents By Year of Grant:	29	6	4	12	16	28	15	22	24	25	23	9	4	0	1	218
Patents By Year of Application:	41	6	14	17	22	24	23	33	24	7	5	1	0	1	0	218

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 36

---- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

Pre

	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL
--	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-------

**ACUSON CORPORATION**

Patents By Year of Grant:	2	0	0	0	2	2	3	3	3	15	17	26	51	43	50	217
Patents By Year of Application:	2	1	0	3	2	4	3	6	26	24	50	42	47	7	0	217

**BROWN & WILLIAMSON TOBACCO CORPORATION**

Patents By Year of Grant:	124	7	6	12	10	9	4	7	6	3	1	7	10	6	5	217
Patents By Year of Application:	134	9	9	14	5	4	7	6	1	7	7	9	4	1	0	217

**FURUKAWA ELECTRIC CO., LTD.**

Patents By Year of Grant:	27	11	9	12	4	11	21	20	12	10	13	13	15	16	23	217
Patents By Year of Application:	45	6	9	10	13	25	16	10	12	13	19	20	11	7	1	217

**W. L. GORE & ASSOCIATES, INC.**

Patents By Year of Grant:	11	3	8	11	9	13	20	10	18	26	25	34	19	9	0	216
Patents By Year of Application:	18	7	9	11	16	17	25	22	34	28	22	7	0	0	0	216

**TRW OCCUPANY RESTRAINT SYSTEMS GMBH & CO., KG**

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	0	14	42	54	49	56	215
Patents By Year of Application:	0	0	0	0	0	0	0	0	6	33	75	49	42	10	0	215

**EXEDY CORPORATION**

Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	2	21	32	75	50	34	214
Patents By Year of Application:	0	0	0	0	0	0	0	3	12	29	69	51	40	10	0	214

**WARNER-LAMBERT COMPANY**

Patents By Year of Grant:	85	8	12	7	15	9	3	13	11	7	11	11	6	8	8	214
Patents By Year of Application:	101	12	11	9	6	8	10	12	15	6	11	6	7	0	0	214

**LINDAUER DORNIER GESELLSCHAFT MBH**

Patents By Year of Grant:	48	8	13	11	7	11	7	13	13	10	7	13	13	23	15	212
Patents By Year of Application:	61	12	8	12	7	9	15	9	11	14	9	17	15	11	2	212

**RICHARD WOLF GMBH**

Patents By Year of Grant:	62	8	12	6	22	18	6	11	11	11	6	12	12	10	5	212
Patents By Year of Application:	76	11	11	28	8	8	11	11	10	11	13	11	2	1	0	212

**YKK CORPORATION**

Patents By Year of Grant:	0	0	0	0	1	2	0	3	8	22	38	32	44	30	32	212
Patents By Year of Application:	0	0	0	2	1	2	2	17	27	47	32	43	33	5	1	212

**NEW HOLLAND NORTH AMERICA, INC.**

Patents By Year of Grant:	0	0	0	0	0	0	0	23	33	18	28	40	34	34	210	
Patents By Year of Application:	0	0	0	0	0	0	8	38	23	27	28	38	37	11	0	210

----- Technology Assessment and Forecast Report -----

**MECHANICAL CLASSES (12-31-2001)**

Page B - 37

#### ----- Organizational Patenting

(Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre																		
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL			
<b>NORDICA S.P.A.</b>																			
Patents By Year of Grant:	40	16	14	9	17	14	15	8	14	19	12	15	9	7	1	210			
Patents By Year of Application:	67	12	9	11	20	10	19	14	18	17	9	2	1	1	0	210			
<b>TEKTRONIX INC.</b>																			
Patents By Year of Grant:	52	14	8	10	10	14	7	7	10	17	12	19	20	8	2	210			
Patents By Year of Application:	70	5	15	11	16	9	14	14	15	13	19	8	0	1	0	210			
<b>LEAR CORPORATION</b>																			
Patents By Year of Grant:	0	0	0	0	0	0	0	0	0	1	17	52	62	42	35	209			
Patents By Year of Application:	0	0	0	0	0	0	0	1	7	55	67	31	32	16	0	209			
<b>STANFORD UNIVERSITY, LELAND JUNIOR, THE BOARD OF TRUSTEES OF</b>																			
Patents By Year of Grant:	59	17	7	9	12	13	14	8	6	7	9	7	15	18	8	209			
Patents By Year of Application:	84	9	10	10	14	11	6	6	14	6	12	16	10	1	0	209			
<b>HILL-ROM COMPANY, INC.</b>																			
Patents By Year of Grant:	13	2	4	4	5	11	4	11	18	9	12	18	18	33	46	208			
Patents By Year of Application:	17	4	4	8	7	11	18	15	18	13	24	25	32	10	2	208			
<b>M.A.N.-MASCHINENFABRIK AUGSBURG-NURNBERG AKTIENGESELLSCHAFT</b>																			
Patents By Year of Grant:	205	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	208		
Patents By Year of Application:	208	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	208		
<b>MANNESMANN REXROTH GMBH</b>																			
Patents By Year of Grant:	72	18	19	25	12	12	13	11	3	5	9	6	2	1	0	208			
Patents By Year of Application:	110	16	16	15	8	15	7	5	7	4	3	2	0	0	0	208			
<b>ASEA BROWN BOVERI AKTIENGESELLSCHAFT</b>																			
Patents By Year of Grant:	0	0	2	3	3	2	0	4	2	0	28	44	33	36	49	206			
Patents By Year of Application:	0	3	1	6	1	1	3	2	17	52	36	42	40	2	0	206			
<b>WESTVACO CORPORATION</b>																			
Patents By Year of Grant:	107	5	5	11	4	6	5	7	8	5	4	14	9	7	9	206			
Patents By Year of Application:	112	7	8	6	3	5	12	6	5	10	12	9	6	5	0	206			
<b>UOP</b>																			
Patents By Year of Grant:	151	1	4	1	1	2	4	5	8	7	2	4	6	9	0	205			
Patents By Year of Application:	154	3	1	0	2	6	9	6	5	2	6	11	0	0	0	205			
<b>BELoit CORPORATION</b>																			
Patents By Year of Grant:	126	6	23	21	14	13	1	0	0	0	0	0	0	0	0	0	204		
Patents By Year of Application:	148	20	16	13	6	1	0	0	0	0	0	0	0	0	0	0	204		

---- Technology Assessment and Forecast Report ----

MECHANICAL CLASSES (12-31-2001)

Page B - 38

---- Organizational Patenting (Granted: Jan 01, 1977 - Dec 31, 2001) ---- Ranked List of Organizations with 200 or More Patents ----

	Pre															
	1988	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	TOTAL

LORD CORPORATION

Patents By Year of Grant:	48	4	14	15	9	5	8	4	6	8	6	16	17	21	23	204
Patents By Year of Application:	61	11	16	4	12	5	6	6	9	17	23	18	13	3	0	204

WEYERHAEUSER COMPANY

Patents By Year of Grant:	112	11	6	8	10	7	8	6	4	5	8	2	2	7	8	204
Patents By Year of Application:	126	8	10	12	4	6	7	1	10	3	1	8	6	1	1	204

INA WALZLAGER SCHAEFFLER KG

Patents By Year of Grant:	25	11	18	12	12	7	11	6	16	17	24	28	13	2	1	203
Patents By Year of Application:	43	8	15	13	8	9	7	19	24	27	28	1	1	0	0	203

JULIUS BLUM GMBH

Patents By Year of Grant:	77	8	21	15	8	3	6	10	7	10	10	6	7	8	7	203
Patents By Year of Application:	95	16	14	7	4	10	3	10	15	6	9	8	5	1	0	203

UNIVERSITY OF TEXAS

Patents By Year of Grant:	22	7	11	10	14	12	11	16	14	17	15	10	17	17	10	203
Patents By Year of Application:	36	15	18	9	13	18	13	15	17	15	14	12	8	0	0	203

THE BOC GROUP PLC

Patents By Year of Grant:	12	14	2	5	6	11	6	12	11	17	28	22	21	21	14	202
Patents By Year of Application:	27	4	8	7	8	7	11	13	26	26	25	22	14	4	0	202

EP TECHNOLOGIES, INC.

Patents By Year of Grant:	0	0	0	2	0	0	3	13	10	17	15	36	45	41	19	201
Patents By Year of Application:	0	1	1	0	4	10	13	16	28	57	42	16	8	5	0	201

INTEL CORPORATION

Patents By Year of Grant:	8	3	5	4	4	6	7	6	6	15	15	19	22	43	37	200
Patents By Year of Application:	14	5	2	6	5	6	10	19	12	26	21	35	33	6	0	200

SHERWOOD MEDICAL COMPANY

Patents By Year of Grant:	38	9	26	21	13	23	16	21	14	10	6	3	0	0	0	200
Patents By Year of Application:	67	26	10	12	24	24	15	14	8	0	0	0	0	0	0	200

Other Organizations (109552)

Patents By Year of Grant:	143309	16044	18936	17769	18681	18470	18173	19076	18286	19477	19619	25418	26631	28614	30524	439027
Patents By Year of Application:	170984	17626	17997	18799	18916	19330	20032	21666	23296	24457	27473	27078	23224	7835	314	439027